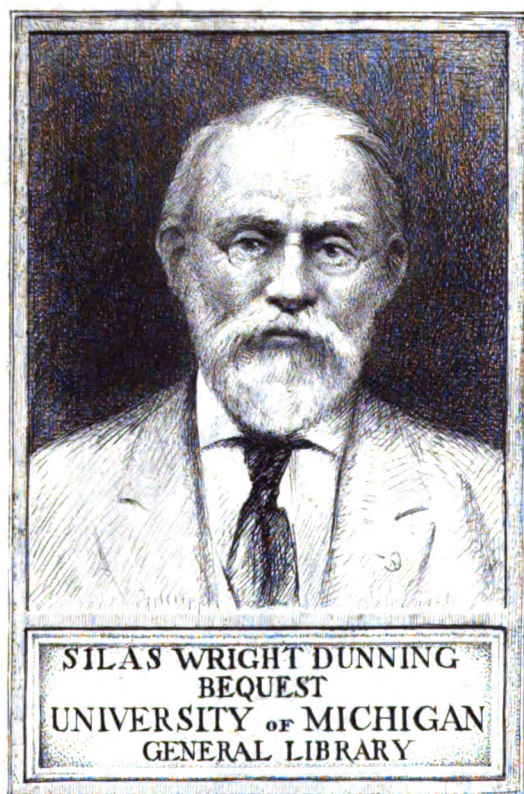

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JOURNAL OF THE UNITED SERVICE

INSTITUTION

OF

INDIA.

Vol. XXIII.

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Lieut.-Colonel	Cole, H. H. ...	R. E.
Captain ...	Colemn, W. F. ...	Suffolk Regiment.
Major-General, K.C.I.E.	Collen, Sir E. H. H. ...	Secy. to Govt. Military Dept.
Major, Bart ...	Colleton, Sir B. A. W. ...	Royal Welch Fusiliers.
Staff Captain	Colomb, F. C. ...	42nd G. L. I., Attache, I B, Qr. Mr. Genl.'s Dept.
Br.-Genl., c.B.	Combe, Boyee, A. ...	Commanding Sindh District.
Captain ...	Comins, H.	1st Bengal Infantry.
Lieutenant ...	Coningham, H. J. ...	Leinster Regiment.
Colonel ...	Cook, J. ...	36th Sikhs.
Captain ...	Cook, W. ...	30th Madras Infantry.
Colonel ...	Cooke, T. A.	Assistant Adjutant General.
Captain ...	Cookson, G. A. ...	16th Bengal Cavalry.
Lieutenant ...	Cooper, H. A. ...	1st Sikhs.
Captain ...	Couchman, G. H. H.	D. A. Q. M. G., I. B. Burma.
Captain ...	Cox, H. V.	21st Madras Pioneers.
Lieut.-Colonel	Craigie, J. H. S. ...	Highland Light Infantry.
Captain ...	Craster, J. C. B. ...	12th Bengal Infantry.
Captain ...	Craufurd, J. A. H.	7th Bombay Infantry.
Lieutenant ...	Crawford, A. T. ...	R. A.

Rank.	Name.	Corps or Department.
Colonel ...	Crawley, T. G....	A. A. G.
Major ...	Crole-Wyndham, W. G.	21st Hussars.
Lieut.-Col., v.c.	Creagh, O' M. ...	29th Bombay Infantry.
Lieutenant ...	Crookshank, C. de W....	R. E.
Lieutenant ...	Crossthwaite, J. G. ...	A.D.C. to H. H. the Lt. Govr. N. W. P. and Oudh.
Captain ...	Crowther, R. T. ...	23rd Pioneers.
Captain ...	Cunliffe, E. W. ...	6th Punjab Infantry.
Surgn.-Lt.-Col.	Cunningham, D. D. ...	I. M. S.
Colonel ...	Cunningham, E. ...	Commanding at Nasirabad.
Lieut.-Colonel	Curtin, F. J. ...	Gloucestershire Regiment.
Major ...	Curties, J. G. C. .	A. A. G. for Musketry, Poona.
Br.-Genl., c.B.	Dalrymple, W. L. ...	Comdg. Nerbudda District.
Captain, C.I.E.	Daly, H. ...	Staff Corps.
Lieutenant ...	Daunt, W. D. ..	C. I. Horse.
Lieut.-Colonel	Davidson, J. ...	3rd Punjab Cavalry.
Lieutenant ...	Davies, H. R. ...	Oxford Light Infantry.
Captain ...	Davies, O. E. M..	D. A. A. G.
Captain ...	Davis, C. ...	1st Bengal Cavalry.
Captain ...	Davison, K. S....	D. A. A. G.
Major ...	Dawkins, H. S. .	R. A.
Lieutenant ...	Day, A. G. Fitz R.	2nd Welsh Regiment.
Colonel ...	Deane, T. ...	Dir. Army Remt. Department
Captain ...	DeBrath, E. ...	Aest. Secy. to Govt. M. D.

Rank.	Name.	Corps or Department.
2nd Lieut. ...	DeLabilliere, E. G. D...	Royal W. K. Regiment.
Captain, C.I.E. C.M.G.	DeLæssøe, A.	Asst. Commissioner Merwara.
Colonel ...	DeLatour, E. J. ...	R. A.
Captain, D.S.D.	DeLisle, H. de S. ...	Durham Light Infantry.
Lieutenant ...	DeMontmorency, R.H.L. J.	21st Hussars.
Major ...	Des Vœux, C. H. ...	36th Sikh Infantry.
Major, v.c. ..	Dick Cunyngham, W.H.	Staff Corps.
Lieutenant ...	Dickson, J. H....	5th Bombay Light Infantry.
Lieutenant ...	Dill, R....	Wiltshire Regiment.
Captain ...	Dixon, P. E. ...	R. E.
Captain ...	Dobbie, H. H. ...	D. A. A. G. for Musketry.
Lieutenant ...	Dockerill, R. C...	2nd Punjab Volunteer Rifles.
Lieutenant ...	Donnan, W. ...	19th Madras Infantry.
Lient..Colonel	Dorling, F. ...	Royal Sussex Regiment.
Major, D.S.O...	Dorward, A. R. F. ...	R. E.
Captain ...	Douglas, G. B....	Queen's Bays.
Lieutenant ...	Douglas, J. A. ...	2nd Bengal Lancers.
Lieutenant ...	Drummond, E. J. ..	2-2nd Goorkhas. .
Major ...	Drummond, F. H. R. ...	11th Bengal Lancers.
Captain ...	Duff, B... ..	D. A. A. G,
Captain ...	DuMoulin, L. E. ...	Royal Sussex.
Captain, D.S.O.	Dun, E. W. ...	20th Bengal Infantry.
Captain ...	Dunsterville, K. S. ..	R. A. Ordnance Department.

Rank.	Name.	Corps or Department.
Lient.-Colonel, K.C.I.E., C.S.I.	Durand, Sir H. M. ...	Secy. to the Govt., Foreign Department.
Major ...	Duthy, A. E. ...	R. A.
Lieut.-Colonel	Dyce, G. H. C....	33rd Punjab Infantry.
Major-General	East, C. J. ...	Comdg. Burma District.
Captain ...	Edwards, C. G. F. ...	5th Punjab Cavalry.
Colonel ...	Elles, E. R. ...	D. Q. M. G.
Major-General, K.C.B.	Elles, Sir W. K. ...	Comdg. Rawal Pindi District.
Major, D.S.O...	Elliot, E. L. ...	1st Bombay Lancers.
Colonel ...	Evans, H. M. ...	43rd G. L. I.
Captain ...	Evatt, J. T. ...	39th Garhwalis.
Lieutenant ...	Ewing, J. R. ...	21st Hussars.
Surgn. Lt.Col.	Exham, R. ...	M. S.
Br.-General ...	Eyre, E. H. ...	Q. M. G. Madras.
Major ...	Eyre, V. G. L....	34th Pioneers.
Captain ...	Fagan, H. H. F. .	10th Bengal Lancers.
Lieutenant ...	Fagan, H. R.	1st Punjab Infantry.
Lieutenant ...	Fair, J. G.	21st Hussars.
Captain ...	Faithful, H. T. ...	Hong Kong N. I. Regiment.
Esquire ...	Fanshawe, A. U. ...	Civil Service.
Esquire ...	Fanshawe, H. C. .	Civil Service.
Captain ...	Fasken, W. H....	Bde.-Major to I. G. of Cavy.
Surgeon-Major	Faulkner, A. S. .	I. M. S.
Lieutenant ...	Faulknor, A. A. M. M...	2nd Bombay Grenadiers.

Rank.	Name.	Corps or Department.
Br.-Genl., C.B.	Faunce, E. ...	Comdg. Bangalore District.
Captain ...	Fegen, M. F. ...	R. A.
Captain, D.S.O.	Fendall, C. P. ...	R. A.
Major ...	Fenton, A. B. ...	2nd Madras Lancers.
2nd Lieut. ...	Fergusson, A. C. ...	R. A.
Major ...	Field, W. C. F... ..	Asst. Acct. General M. D.
Lieutenant ...	Finch, C. ...	10th Bengal Cavalry.
Captain ...	Finch, E. H. ...	E. Lancashire.
Esquire, M.A...	Finlay, J. F. ...	Civil Service.
Lieutenant ...	Fisher, J. ...	1-2nd Goorkhas.
Lieut.-Colonel	Fletcher, A. F... ..	R. A.
Captain ...	Fleming, J. M... ..	Staff Corps.
Lieutenant ...	Foord, E. R. ...	23rd Madras Infantry.
Captain ...	Forbes, E. E. ...	2nd Madras Lancers.
Captain ...	Forbes, L. A. ...	39th Garhwalis.
Lieutenant ...	Ford, C. A. W... ..	4th Bombay Infantry.
Captain ...	Forde, L. ...	R. A.
Captain ...	Forestier-Walker, C. E... ..	R. A.
Lieutenant ...	Forth, W. ...	30th Punjab Infantry.
Captain ...	Foss, K. M. ...	5th Madras Infantry.
Captain ...	Fowler, H. B. ...	The Queens.
Captain ...	Francis, J. C. ...	D. A. A. G. for Musketry.
Major-General	Frankfort, Lord ...	Comdg. Lahore Dist. Meer. Meera

Rank.	Name.	Corps or Department.
Lieutenant ...	Fraser, N. G. ...	4th Bombay Cavalry.
Major ...	Freeman, B. L... ..	(Late 2nd Punjab Vol. Rifles)
Captain ...	Fuller, R. W.	R. A.
Lieutenant ...	Garratt, H. S. ...	26th Bombay Infantry.
Colonel ...	Garrett, A. J. ...	M. S. to Resident Hyderabad.
Major ...	Gartside Tipping, R. F...	1st B. C.
Lt.-Col., c.B....	Gaselee, A. ...	1-5th Goorkhas.
Br. Genl., d.s.o.	Gatacre, W. F. ...	A. G. Bombay Army.
Major ...	Gem, A. H. S. ...	Royal Sussex.
Captain ...	Geoghegan, T. P. ...	D. A. A. G., Bombay.
Major ...	Gibbs, M. I. ...	31st Punjab Infantry.
Lieut.-Colonel	Gilchrist, R. A... ..	3rd Lancers Hyd. Contingent.
Lieut.-Colonel	Gildea, T. S. ...	Gordon Highlanders.
Major ...	Glancy, J. G. ...	Leinster Regiment.
Major ...	Glennie, E. ...	R. E.
Esquire ...	Goad, Horace, B. ...	... ..
Captain ...	Godfrey, S. H....	Indian Staff Corps.
Lieut.-Colonel	Gordon, A. E. ...	Bengal Staff Corps.
Lieut.-Colonel	Gordon, H. K....	Moulmein Volunteers.
Major ...	Gordon, J. C. F. ...	6th Bengal Cavalry.
Lieutenant ...	Gordon, Lincoln ...	N. W. Railway Volrs.
Major ...	Gordon, R. ...	22nd Punjab Infantry.
Captain ...	Gordon, S. D. ...	[Mily. Dept. Asst. Secy. to Govt. of India,

Rank.	Name.	Corps or Department.
Lieut.-Colonel	Gordon, S. V. ...	23rd Pioneers.
Lieutenant ...	Gordon, W. E....	Gordon Highlanders.
Captain ...	Gough, S. C. ...	5th Bengal Cavalry.
Lieutenant ...	Graham, G. L....	21st Hussars.
Maj.-Genl., C.B.	Graham, T. ...	Comdg. Rohilkund District.
Lieut.-Colonel	Grant, H. G. ...	Seaforth Highlanders.
Maj.-Genl., C.B.	Grant, H. F. ...	I. G. of Cavalry.
Lieut.-Colonel	Grant, Jas. ...	4th Bombay Rifles.
Major ...	Grant, S. ...	R. E.
Lieut.-Colonel	Graves, B. C. ...	5th Bengal Infantry.
Major ...	Gray, W. du G. ...	D. A. A. G.
Major ...	Greenfield, R. M. ...	A. A. G.
Lieutenant ...	Greenhill-Gardyne, A.D.	Gordon Highlanders.
Lieutenant ...	Grey, W. G. ...	3rd Madras Light Infantry.
Captain, C.S.I.	Griesbach, C. L. ...	Geological Survey Dept.
Lieutenant ...	Griffith, G. H....	R. E.
Captain ..	Grimston, R. E. ...	A. D. C. to H. E. the Viceroy
Lieutenant ...	Grimston, S. B. ...	18th Bengal Lancers.
Lieutenant ...	Grove, H. M. ...	1st Bengal Cavalry.
Captain ...	Grover, M. H. S. ...	D. A. A. G.
Captain ...	Guinness, E. ...	R. A.
Lieutenant ...	Gunning, C. J....	1st Madras Pioneers.
Lieut.-Colonel	Gunter, H. ...	Norfolk Regiment.

Rank.	Name.	Corps or Department.
Captain ...	Gwyn, A. ...	Indian Marine.
Colonel ...	Hailes, W. ...	6th Bengal Infantry.
Major ...	Halkett, H. Craigie ...	32nd Pioneers,
Colonel ...	Halkett, W. G. Craigie..	31st Punjab Infantry.
Esquire, C.I.E.	Hallen, J. H. B, ...	Inspr. Genl. Civil Vety. Dept.
Lieutenant ...	Hamilton, C. ...	2nd Bengal Infantry.
Br.-General ...	Hamilton, A. F. ...	R. E., Comdg. Rangoon Dist.
Captain ...	Hamilton, E. O. ...	Inspector Army Signalling.
Colonel, D.S.O.	Hamilton, Ian. S. M. ...	M. S. to H. E. the C.-in-C.
Captain ...	Hamilton, W. G. ...	D. A. A. G.
Col., v.c., C.B., D.S.O., A.D.C.	Hammond, A. G. ...	Guides.
Colonel, C.B....	Handcock, A. G. ...	Staff Corps.
Lieutenant ...	Hare, R. H. ...	R. A.
Lieut.-Colonel	Hargreave, H. J. B. ...	B. B. and C. I. R. V,
Lieut.-Colonel	Harley, G. E. ...	The Buffs.
Lieutenant ...	Harris, A. P. D. ...	11th Bengal Infantry,
Captain ...	Harris, C. W. ...	4th Bengal Infantry.
Major ...	Harris, W. O. ...	20th Punjab Infantry.
Captain ...	Harrison, D. C. W. ...	4th Bombay Rifles.
Esquire ...	Hart, G. H. R....	Accounts Department.
Major ...	Hart, H. H. ...	R. E.
Colonel, v.c....	Hart, R. ...	Director Military Education.
Colonel ...	Harvey, C. L....	A. A. G.

Rank.	Name.	Corps or Department.
Colonel ...	Hastings, F. E... ..	2nd Sikh Infantry..
Major ...	Haughton, J.	35th Sikhs.
Captain ...	Hawkes, L. H.... ..	2nd Welsh Regiment.
Captain ...	Hawkins, F.	1st Bengal Infantry.
Captain ...	Hayden, F. A... ..	West Riding Regiment..
Lieutenant ...	Heastey, C. R... ..	Royal Inniskilling Fusiliers.
Captain ...	Heaven, F. G.	Shillong Volunteer Corps.
Captain ...	Hemphill, F.	K. O. S. B's.
Major ...	Henderson, P. E.	Assistant Commr. Assam.
Major ...	Henriques, E. N.	R. A.
Lieut.-Colonel	Henry, G.	R. E.
Captain ...	Herbert, C.	Political Agent..
Captain ...	Herbert, L.	Intpr. to H. E. the C.-in. C.
Lieut.-Colonel	Harvey, H. de La M.	1st Punjab Cavalry.
Esquire, C.I.E.	Hewett, J. P.	Civil Service..
Capt., C.I.E., A.D.C.	Hext, J... ..	R. N.
Lieutenant ...	Hill, J. P.	20th Bombay Infantry.
Major ...	Hill, T. H.	Asst. Secy. to P.M.O H.M.'s F.
Lieut.-Colonel	Hill, W.	1-2nd Gurkhas..
Lieut.-Colonel	Hilliard, W. E... ..	Staff.
Lieut.-Colonel	Hobday, T. F.... ..	C. G. Eastern Circle.
Lieutenant ...	Hodgson, C. E... ..	1st Bengal Cavalry.
Lieutenant ...	Hodson, G. B.	Guides.

Rank.	Name.	Corps or Department.
Br.-General ...	Hogg, G. C. ...	Q. M. G. Bombay Army.
Major ...	Hogge, C. ...	33rd Bengal Infantry.
Major ...	Hogge, J. W. ...	14th Sikhs.
Staff Captain	Holland, P. ...	Paid Attaché, I. B., Qr. Mr. Gen'l's. Dept.
Lieutenant ...	Holland-Pryor, P. ...	13th (D. C.) B. L.
Lieutenant ...	Home, J. M. ...	1-2nd Goorkhas.
Lieutenant ...	Horsburgh, R. P. ...	Assistant Commissioner.
Captain ...	Hovell, H. de B. ...	Worcestershire Regiment.
Captain ...	Howell, L. J. ...	16th Bengal Cavalry.
Major ...	Howlett, A. ...	12th Madras Infantry.
2nd Lieut. ...	Hudson, A. K....	17th Bengal Cavalry.
Lieutenant ...	Hughes, F. T. C. ...	Erinpura Irregular Force.
Lieutenant ...	Hughes, V. ...	35th Sikhs.
Captain, D.S.O.	Huggins, P. G....	21st Madras Pioneers.
Captain ...	Hume, C. V, ...	R. A.
Colonel ...	Hunt, J. L. ...	7th Hussars.
Colonel ...	Hutchins, A. G... ..	.....
Captain ...	Hutchins, H. L. ...	A. C. General, Madras.
The Hon'ble K.C.I.E., C.I.E.	Hutchins, Sir P. P. ...	Viceregal Council.
Lieut.-Colonel	Hutchinson, H. D. ...	2-3rd Gurkhas.
Lieut.-Colonel	Hutchinson, J. B. ...	Deputy Commissioner.
Lieutenant ...	Hutton, G. M....	R. E.
Captain ...	Ievers, O. G. ...	1st Madras Lancers.

Rank.	Name.	Corps or Department.
Captain ...	Iggulden, H. A. ...	2nd Derbyshire Regiment.
Colonel, D.S.O.	Ilderton, C. E. ...	"The Queens."
Major ...	Ingram, E. R. B. ...	2nd Welsh Regiment.
Captain ...	Jackson, J. ...	9th Madras Infantry.
Lieutenant ...	Jacob, C. W. ...	24th Bombay Infantry.
Lieut.-Colonel	James, L. H. S. ...	R. A.
Major ...	Jamieson, A. W. ...	7th Bengal Infantry.
Colonel ...	Jeffreys, P. D. ..	A. A. G.
Major ...	Jenkins, T. M....	Deputy Commissioner, Burma
Captain ...	Jenkinson, G. S. C. ..	D. A. A. G.
Colonel ...	Jennings, R. M. ...	D. A. G.
Captain ...	Jermyn, T. ...	2nd Sikh Infantry.
Captain ...	Johnstone, A. A. J. ...	5th Punjab Infantry.
Lieutenant ...	Johnstone, B. A. ...	21st Madras Infantry.
Captain ...	Jones, A. E. ...	23rd Pioneers.
Lieut.-Colonel	Jones, W. H. D. ...	2nd Bombay Lancers.
Captain ...	Justice, C. E. G. ...	13th Bengal Infantry.
Captain ...	Keary, H. D' U. ...	31st Madras Infantry.
Captain ...	Keate, C. R. ...	31st Madras Infantry.
Major, D.S.O...	Keene, A. ...	R. A.
Major, D.S.O...	Keigley, C. M....	Assistant Commissary Genl.
Lieut.-Colonel	Keith, J. ...	R. A.
D.S.O. Lieut.-Colonel	Kelly, J. G. ...	32nd Pioneers.

Rank.	Name.	Corps or Department.
Captain ...	Kelly, R. M. D. F. ...	R. A.
Captain ...	Kemball, G. V... ...	D. A. Q. M. G. for Mobn.
Vety.-Major ...	Kemp, W. H. ...	Army Vety. Department.
Lieutenant ...	Kenna, P. A. ...	21st Hussars.
Lieutenant ...	Kennedy, W. M. ...	9th Madras Infantry.
Lieutenant ...	Kennion, R. L... ...	2nd C. I. Horse.
Major ...	Kekewich, R. G. ...	Mily. Secy. to H. E. the C-in-C. Madras.
Lieutenant ...	Kilmer, C. H. ...	R. A.
Br.-Genl., C.B.	Kinloch, A. A. A. ...	Comdg. Peshawar District.
Lieut.-Colonel	Kirkwood, J. N. ...	6th Infantry Hyd. Contgt.
Captain ...	Kitchener, F. W. ...	D. A. A. G. for Instruction.
Major ...	Kitson, G. C. ...	D. A. A. G.
Lieutenant ...	Knight, W. C....	4th Bengal Cavalry.
Captain ...	Kreyer, F. A. C. ...	16th Bombay Infantry
Lieutenant ...	Laing, F. C. ...	12th Kelat-i-Ghilzais.
Br.-Genl., C.B.	Lance, F.	Commanding Presy. Dist.
Lieutenant ...	Lathbury, H. O. ...	R. E.
Captain ...	Laurence, R. T. R. ...	R. E.
Colonel ...	Lawrence, W. A. ...	17th Bengal Cavalry.
Lieut.-Colonel	Leckie, F. W. V. ...	19th Bombay Infantry.
Captain ...	Lennox, C. F... ...	Suffolk Regiment.
Colonel, C.I.E.	LeMessurier, A. ...	R. E.
Lieutenant ...	Leonard, A. W. ...	4th Infantry Hyd. Contg.

Rank.	Name.	Corps or Department.
Major-Genl. ...	Lewes, H. C. ...	Inspector Genl. of Artillery.
Lieutenant ...	Liddell, J. S. ...	R. E.
Lieutenant ...	Liebert, B. R. ...	7th Hussars.
Captain ...	Lindesay, E. ...	Loyal N. Lancashire Regt.
Major ...	Lister, W. J. ...	R. E.
Captain ...	Little, C. B. ...	Somerset Light Infantry.
Major ...	Lloyd, E. ...	1st Punjab Cavalry.
Lieut.-Colonel	Loch, W. ...	Staff Corps.
Major-General K.C.B., C.S.I.	Lockhart, Sir W. S. A...	Comdg. Punjab Frontier Force
Lieutenant ...	Loudon, J. A. ...	19th Madras Infantry.
Lieut.-Colonel	Lucas, C. A. De N. ...	6th Bombay Cavalry.
Lieutenant ...	Lucas, F. G. ...	2-5th Gurkhas,
Lieutenant ...	Luck, C. A. ...	2nd Punjab Cavalry.
Maj.-Genl., C.B.	Luck, G. ...	Comdg. Quetta District.
Lieutenaut ...	Lyne, C. V. N....	16th Madras Infantry.
Lieutenant ...	Lyon, J. W. H...	15th Madras Infantry.
Captain ...	Lyster, A. ...	1-3rd Gurkhas.
Lieutenant ...	Macalpine-Leny, R. L...	16th Lancers.
Lieutenant ...	Macauley, P. J. F. ...	R. E.
Major ...	Macbay, W. G. W. ...	26th Bombay Infantry.
Captain ...	Macdonald, J. R. L. ...	R. E.
Lieutenant ...	Macdonald, R. H. ...	R. E.
Captain ...	Macdonnell, A. C. ...	R. E.

Rank.	Name.	Corps or Department.
Lt.-Col., D.S.O.	MacGregor, C. R. ...	10th Madras Infantry.
Lieutenant ...	Machlachlan, T. R. ...	Border Regiment.
Major ...	Mackenzie, C. J. ...	D. A. A. G.
Major ...	Mackenzie, K. R. ...	Seaforth Highlanders.
Captain ...	Mackenzie, R. ...	R. E.
Captain ...	Mackenzie-Kennedy, E. C. W.	1st Madras Pioneers.
Esquire ...	Macpherson, J. M. ...	Dy. Secy. to Govt. of India. Legislative Department.
Colonel, C.B...	MacNeill, J. G. R. D. ...	14th Madras Infantry.
Lieut., V.C. ...	MacMunn, G. F. ...	R. A.
Major ...	Maisey, F. C. ...	30th Punjab Infantry.
Colonel ...	Maitland, J. P. ...	Depy. Secy. to Govt., M. D.
Lieutenant ...	Major, F. F. ...	1st Infantry Hyd. Contg.
Lieutenant ...	Major, F. J. ...	Army School Department.
Captain ...	Malcolm, P. ...	2-4th Gurkhas.
Major ...	Mansel, A. ...	R. A.
Captain ...	Markham, C. J. ...	4th K. R. Rifles.
Colonel ...	Marsh, F. H. B. ...	G. L. I.
Major ...	Martin, R. H. ...	21st Hussars.
Captain, D.S.O.	Mason, A. H. ...	D. A. Q. M. G., I. B.
Lieut.-Colonel	Masson, D. P. ...	1st P. V. R. C.
Captain ...	Massy, G. ...	1st Norfolk.
Major ...	Masters, A. ...	2nd C. I. Horse.

Rank.	Name.	Corps or Department.
Captain ...	Maunsell, G. W. ...	Royal West Kent.
Captain ...	Maxwell, G. W. ...	26th Madras Infantry.
Lieutenant ...	Maxwell, H. G. ...	Asst. Comdt. Upper Chindwin Bn. Military Police.
Captain ...	Mayhew, H. S....	Border Regiment.
Captain ...	McCarthy, G. A. ...	19th Punjab Infantry.
Surgn.-Major	McCartic, C. ...	39th Garhwalis.
Lt.-Col. ...	McClintock, W. G. W...	2nd Yorkshire Regiment.
Lieutenant ...	McNeile, D. H. ...	R. A.
Captain, D.S.O.	McSwiney, E. H. F. ...	D. A. Q. M. G., I. B.
Lieutenant ...	McSwiney, W. D. ...	7th Dragoon Guards.
Major ...	Meade, M. J. ...	Staff Corps.
Lt.-Col. ...	Mecham, J. R....	2nd Scottish Rifles.
Lieutenant ...	Medley, A. G. ...	19th Bengal Lancers.
Captain ...	Medley, E. J. ...	17th Bengal Cavalry.
Lt.-Col., C.M.G.	Meiklejohn, W. H. ...	20th Punjab Infantry.
Lt.-Col. ...	Mellis, H. ...	Staff Corps.
Lieutenant ...	Mercer, W. H. W. ...	26th Madras Infantry.
Esquire, C.S.I.	Merk, W. R. H..	Civil Service.
Colonel ...	Michell, J. W. A. ...	Staff Corps.
Lt.-Col. ...	Michell, St. John F. ...	A. A. G.
Lieutenant ...	Millar, W. H....	27th Punjab Infantry.
Captain ...	Miller-Walnut, C. C....	Gordon Highlanders.
Lieutenant ...	Milne, G. F. ...	R. H. A.

Rank.	Name.	Corps or Department.
Lieutenant ...	Mitchell-Innes, C. ...	Royal Canadians.
Lieut.-Colonel	Molloy, E.	2-5th Gurkhas.
Colonel ...	Money, E. A. ...	3ad Bengal Cavalry.
Major ...	Money, E. E. ...	9th Bengal Lancers.
Captain ...	Money, G. A. ...	18th Bengal Lancers.
Lieut.-Colonel	Montgomery, J. A. L...	Deputy Commissioner, Sialkot
Captain ...	Moore, G. H. J. ...	Merwara Battalion.
Lieut.-Colonel	More-Molyneux, G. H...	A. Q. M. G., I. B.
Lieut.-Colonel	Morris, A. W. ...	2nd Northamptonshire Regt.
Colonel ...	Morris, R. ...	1st Bengal Cavalry.
Lieutenant ...	Morris, R. L. ...	3rd Bengal Cavalry.
Lieut.-Colonel	Morse, W. J. ...	17th Bombay Infantry.
Major ...	Morrison, R. H. ...	18th Hussars.
Lieutenant ...	Morton, E. R. ...	31st Punjab Infantry
Br.-Genl., C.B.	Morton, G. de C. ...	Comdg. Bundelkhund Dist.
Captain ...	Moulton-Barrett, H. P..	2nd A. and S. Highlanders.
Captain ...	Mullins, W. B... ..	33rd Punjab Infantry.
Captain ...	Murray, G. ...	3rd Punjab Cavalry.
Colonel, D.S.O.	Murray, K. D... ..	Asst. Adjutant General.
Lieutenant ...	Murray, S. L. ...	Gordon Highlanders.
H. E. Lt.-Genl. C.B.	Nairne, C. E. ...	C-in-C Bombay Army.
Lieutenant ...	Nangle, K. E... ..	4th Infantry, Hyd. Contgt.
Lt. the Hon'ble	Napier, H. D.... ..	C. I. Horse.

Rank.	Name.	Corps or Department.
Lieutenant ...	Napier, G. S. F. ...	Royal Sussex Regiment.
Major ...	Nedham, E. M. ...	S. C.
Lieutenant ...	Neish, F. H. ...	Gordon Highlanders.
Surgeon-Major M.D.	Nelis, J. A. ...	1-5th Gurkhas.
Lieutenant ...	Nethersole, A. R. ...	27th Madras Infantry.
Lt.-Col. ...	Neville, J. P. C. ...	14th Bengal Lancers.
Major ...	Newall, W. P. ...	1-2nd Goorkhas.
Lieut.-Colonel	Newill, J. H. ...	S. C.
Lieut.-General	Nicholl, T. ...	R. A.
Surgn.-Major ..	Nichols, F. P. ...	M. S.
Captain ...	Nicholson, J. S. ...	7th Hussars.
Br.-Genl., c.B., A.D.C.	Nicolson, M. H. ...	Commanding Deesa District.
Colonel, c.B....	Nicholson, W. G. ...	R. E.
Captain	Nixon, J. E. ...	D. A. A. G. for Instruction.
Lieutenant ...	Norie, C. E. ...	1-2nd Goorkhas.
Captain ...	Norman, W. W. ...	2nd Punjab Cavalry.
Lieutenant ...	Norton, C. E. ...	7th Hussars..
Lieut.-Colonel	Noyes, A. W. ...	2nd West Yorkshire Regt.
Colonel ...	Nutt, H. L. ...	Political Superintendent.
Captain ...	O'Connor, G. ...	Queen's Bays.
Captain ...	O'Donnell, G. B. ...	I. S. C.
Captain ...	O'Donoghue, M. E. ...	13th Madras Infantry

Rank.	Name.	Corps or Department.
Lieutenant ...	Ogg, G. S. ...	R. A.
Captain ...	Oldfield, C. G....	R. A.
Captain ...	O'Neill, W. H....	R. H. A.
Captain ...	O'Leary, T. E....	Royal Irish Fusiliers.
Captain ...	Ormerod, G. S. S. ...	Royal Munster Fusiliers.
Lt.-Col., C.I.E..	Ottley, J. W. ...	R. E.
Surgn.-Major, C.M.G., C.I.E.	Owen, C. W. ...	I. M. S.
Captain ...	Owen, R. ...	21st Hussars.
Br.-Genl., C.B.	Palmer, A. P. ...	Comdg. Allahabad District.
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Captain ...	Parson, J. H. ...	7th Bengal Cavalry.
Esquire ...	Patterson, A. B. ...	Civil Service.
Major ...	Patterson, G. ...	Wyde Bay Mounted Infantry, Queensland Defence Forces.
Lieutenant ...	Patterson, H. Mc N. ...	5th Bengal Cavalry.
Captain ...	Paul, E. T. ...	6th Bengal Cavalry.
Lieutenant ...	Peach, E. ...	3rd Madras Light Infantry.
Colonel, C.B. ...	Pennington, C. R. ...	Comdg. at Rawal Pindi.
Major ..	Pennington, R. L. A. ...	D. A. A. G. for Musketry.
Major ...	Penton, H. E. ...	7th Bombay Infantry.
Captain ...	Perceval, E. M. ...	R. A.
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Captain, C.M.G.	Peyton, W. J. ...	7th Bombay Lancers.
Captain	Phillips, C. ...	D. A. A. G.

Rank.	Name.	Corps or Department.
Lieutenant ...	Phillips, I. ...	1 5th Goorkhas.
Captain ...	Phillips, R. E....	The Buffs.
Captain ...	Piers, W. B. ...	10th Bombay Infantry.
Lieutenant ...	Pigou, F. H. ...	1st Infantry Hyd. Contingent
Captain ...	Pilkington, H. L. ...	21st Hussars.
Captain, D.S.O.	Pink, F. W. ...	The Queens.
Captain ...	Pinney, R. J. ...	Royal Fusiliers.
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Captain ...	Pollard, W. C....	15th Bengal Cavalry.
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Major ...	Porter, A. R. ...	28th Punjab Infantry.
Lieutenant ...	Poulter, C. Mc C. ...	20th Madras Infantry.
Colonel ...	Prendergast, C. L. ...	28th Punjab Infantry.
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Rank.	Name.	Corps or Department.
Major ...	Pulley, C. ...	1-3rd Goorkhas.
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Major ...	Reilly, R. E. D. ...	28th Bombay Pioneers.
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Captain ...	Ringwood, H. ...	Adjutant and Inspector E. L. Rv. Volunteer Corps.
Captain ...	Rippon, G. ...	29th Madras Infantry.
Colonel ...	Rivaz, V. ...	37th Dogras.
Lieutenant ...	Roberts, H. L....	1st Bengal Cavalry.
Lieut., The Hon'ble.	Roberts, F. H. S. ...	King's Royal Rifles.
Captain ...	Robertson, E. E. ...	C. I. Horse.
Esquire ...	Robertson, F. A. ...	Civil Service.
Colonel., c.i.e.	Robertson, J. ...	Retired.
Staff Lieut.,...	Robertson, W. R. ...	Attaché I. B., M. Q. G.'s Dept.

Rank.	Name.	Corps or Department.
Captain ...	Robinson, G. H. ...	1-1st Goorkha Regiment.
Captain ...	Robinson, J. G. ...	1-2nd Goorkhas.
Major ...	Rochfort, A. N. ...	R. H. A.
Captain ...	Rodwell, E. H. ...	Queen's Own Guides.
Surgn.-Lt.-Col.	Roe, W. A. C. ...	I. M. S.
Colonel ...	Rogers, G. W. N. ...	.....
Lt.-Col., D.S.O.	Rose, H. M. ..	27th Punjab Infantry.
Major ...	Rosetter, J. H. ...	R. A.
Captain ...	Ross, C. R. ...	14th Sikhs.
Lieutenant ...	Reuse, A. H. T. ...	1st Madras Pioneers.
Major ...	Routh, W. R. ...	Suffolk Regiment.
Captain ...	Rowe, H. J. A. ...	19th Madras Infantry.
Major ...	Rundall, F. M. ...	2-4th Goorkhas.
Surgn.-Major, M D.	Ryan, M. R. ...	Medical Staff.
Captain ...	Ryecroft, W. ...	7th Dragoon Guards.
Captain ...	Sandbach, A. E. ...	R. E.
Captain ...	Sanders, F. A. ...	2nd Roy. Inniskilling Furs.
Colonel ...	Sanderson, H. B. ..	Judge Advocate General.
Colonel ...	Saward, M. H. ...	R. A.
Major ...	Sawyer, C. E. ...	A. A. G.
Captain ...	Scallan, R. J. ...	23rd Bombay Infantry.
Lieutenant ...	Scharleib, W. K. ...	5th Bengal Cavalry.
Lieut.-Colonel	Scott, C. H. ...	R. A.

Rank.	Name.	Corps or Department.
Lieutenant ...	Seagrim, D. ...	R. A.
Colonel ...	Sewell, H. F. H. ...	M. S. C.
Colonel ...	Shakespear, G. R. J. ...	A. A. G.
Lieutenant ...	Shakespear, L. W. ...	2 2nd Goorkhas.
Lieutenant ...	Sheppard, G. S. ...	9th Bengal Lancers.
Lieutenant ...	Sherwin, F. W. H, ...	2nd Royal Inniskilling Furs.
Lieutenant ...	Shewell, P. G. ...	Military Accounts Department
Lieutenant ...	Sherwood, H. J. ...	R. E.
Major ...	Shirres, J. C. ...	Royal Artillery.
Lieutenant ...	Shore, O. B. S. F. ...	18th Bengal Lancers.
Lieutenant ...	Showers, H. L....	Assistant Commissioner.
Lieutenant ...	Sillery, J. D. ...	26th Bombay Infantry.
Colonel. ...	Simpson, G. ...	A. A. G.
Major ...	Simpson, H. C. C. D....	R. A.
Lieut., v.c. ...	Smith, J. Manners ...	L. S. C.
Lieutenant ...	Snow, R. H. P. ...	2nd Wilts.
Major ...	Sorell, F. S. ...	5th Infantry Hyd. Contgt.
Captain ...	Southey, R. ...	30th Bombay Infantry.
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Major ...	Spencer, C. F. H. ...	Royal Inniskilling Fusiliers.
Major ...	Spratt, F. T. N. ...	R. E.
Major ...	Stawell, G. D....	2nd Bn. Devonshire.
Major-General	Stedman, E. ...	Q. M. G. in India.

Rank.	Name.	Corps or Department.
Surgn. Lt.-Col. M.B.	Stephen, A. ...	Sanitary Commr. Punjab.
Lieutenant ...	Stephen, A. J....	West Yorkshire.
Major ...	Stephenson, T. E. ...	2nd Sussex Regiment.
Captain ...	Stevens, C. ...	D. A. A. G. Burma District.
Captain ...	Stevens, C. M....	Yorkshire Light Infantry.
Captain ...	Stevens, C. F. ...	15th Madras Infantry.
Lieutenant ...	Stevens, N. M. C. ...	21st Madras Infantry.
Lieutenant ...	Stevens, M. ...	13th Bengal Infantry.
Major ...	Stevenson, F. ...	A. A. G. .
Lieutenant ...	Stewart, J. A....	R. A.
Captain ...	Stokes, A. ...	R. H. A.
Lieut.-Colonel	Stopford, A. B. ...	A. A. G.
Lieutenant ...	Strachey, B. ...	2-2nd Goorkhas.
Colonel, c.B....	Strong, D. M. ...	10th Bengal Lancers.
Captain ...	St. John, A. J....	2nd Royal Inniskilling Frs.
Captain ...	Stuart, C. J. L. ...	2nd Punjab Cavalry.
Captain ...	Sutton, H. G. ...	27th Madras Infantry.
Lieutenant ...	Swayne, E. J. E. ...	18th Bengal Infantry.
Lieut.-Colonel	Swaine, C. E.,... ..	11th Hussars.
Major ...	Swaine, E. E. ...	2nd Royal Inniskilling Frs.
Lieut.-Colonel	Swetenham, R. A. ...	27th Punjab Infantry.
Colonel, c.B....	Swinley, G. ...	R. A.
Colonel ...	Swinton Skinner, E. ...	Dy. Judge Advocate General.

Rank.	Name.	Corps or Department.
Lieutenant ...	Sykes, P. M. ...	2nd Queen's Bays.
Colonel C.B....	Symons, W. P. ...	A. A. G. for Musketry.
Major ...	Tagart, F. D. ...	18th Hussars.
Captain ...	Tate, H. R. ...	15th Bengal Cavalry.
Lieutenant ...	Taylor, A. H. M. ...	21st Hussars.
Major ...	Temple, R. C. ...	Rangoon.
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Captain ...	Thatcher, J. F. C. ...	20th Bombay Infantry.
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Captain ...	Thomson, W. D. ...	1st Bengal Infantry.
Captain ...	Thring, R. H. D. ...	1st Madras Lancers.
Captain ...	Thwaytes, E. C. ...	27th Madras Infantry.
Major-General	Tillard, J. A. ...	R. A.
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Lieutenant ...	Tighe, F. A.	R. A.
Lieutenant ...	Tod, J. K. ...	7th Bengal Cavalry.
Major-General, C.I.E.	Tomkins, W. P. ...	R. E.
Captain ...	Towelle, M. ...	2nd Punjab Vol. Rifles.
Major ...	Travers, A. E. ...	D. A. A. G.
Lieutenant ...	Tribe, C. W. ...	38th Dogras.
Colonel ...	Trotter, P. D. ...	Argyll and Southd. Hgdrs.
Lieutenant ...	Troup, H. R. ...	26th Madras Infantry.

Rank.	Name.	Corps or Department.
Lt.-Col., C.I.E.,	Tucker, L. H. E. ...	Bengal Staff Corps.
Lient.-Colonel	Turner, A. H. ...	2nd Punjab Infantry.
Lieut.-Colonel	Turner, S. C. ...	R. E.
Captain ...	Unwin, G. B. ...	1st Punjab Cavalry.
Lieutenant ...	Vaurenen, G. R. ...	16th Bengal Infantry.
Captain ...	Vansittart, E. ...	2-5th Goorkhas.
Captain ...	Van-Straubenzee, C.H.C.	Suffolk Regiment.
Br.-General...	Van-Straubenzee, T. ...	Commanding Madras District.
Captain ...	Vaughan, H. B. ...	7th Bengal Infantry.
Lieutenant ...	Vickers, H. ...	23rd Madras Infantry.
Major ...	Vivian, F. G. ...	38th Bengal Infantry.
Major, D.S.O....	Wace, E. C. ...	R. A.
Lieut.-Colonel	Wace, R. ...	I. G. of O., E. Circle.
Major-General C.S.I.	Walker, A. ...	D. G. O.
Lieut.-Colonel	Walker, J. N. ...	13th Bombay Infantry.
Lieutenant ...	Walker, W. R. ...	15th Madras Infantry.
Captain ...	Wallace, A. ...	27th Punjab Infantry.
Esquire ...	Wallis, B. G. ...	P. W. D.
Lieutenant ...	Wallis, F. J. ...	15th Madras Infantry.
Lieutenant ...	Walters, H. F....	24th Bombay Infantry.
Lieut.-Colonel	Ward, A. E. ...	S. C.
Lieutenant ...	Warden, A. W....	3rd Lancers Hyd. Contg.
Surgn.-Major	Wariiker, D. P. ...	1st Madras Pioneers.

Rank.	Name.	Corps or Department.
Lieut.-Colonel	Warner, W. B....	1st Madras Lancers.
Colonel ...	Waterfield, H. G. ...	Commanding at Ferozepore.
Captain ...	Watkis, H. B. B. ...	31st Punjab Infantry.
Captain ...	Watkins, L. G....	R. A.
Major ...	Watson, A. J. ...	D. A. A. G. for Instruction.
Lieut.-Colonel,	Watts, J. B. ...	7th Bengal Cavalry.
Lieutenant ...	Webster, T. ...	12th Bengal Infantry.
Captain, D.S.O.	Westlake, A. P. ...	1st Madras Lancers.
Major ...	Westmoreland, C. H. ...	6th Bengal Infantry.
Captain ...	Weston, E. ...	2nd Punjab Vol. Rifles.
Lieut.-Colonel	Wetherall, W. A. ...	22nd Bombay Infantry.
Major ...	Wheatley, H. S. ...	42nd Goorkhas.
Captain ...	Whittall, F. V. ...	Staff.
Genl., K.C.B., G.C.I.E., V.C.	White, Sir G. ...	Commander-in-Chief in India.
Captain ...	White, F. P. L. ...	5th Punjab Infantry.
Lieut.-Col. ...	Whitton, J. ...	Royal Scots Fusiliers.
Captain ...	Whyte, C. W. F. ...	17th Bombay Infantry.
Lieutenant ...	Whyte, J. F. ...	4th Sikhs.
Lieutenant ...	Wilberforce, H. W. ...	Queen's Bays.
Captain, D.S.O.	Willcocks, J. ...	Station Staff Officer, Deccan.
Major ...	Wilkieson, C. B. ...	R. E.
Captain ...	Williams, F. T....	26th Madras Infantry.
Captain ...	Williams, H. A. ...	Bangalore Volunteers.

Rank.	Name.	Corps or Department
Lieut.-Colonel	Williams, O. ...	Suffolk Regiment.
Lieutenant ...	Williams, H. E. ...	25th Madras Infantry.
Major ...	Williams, W. B. ...	Wiltshire Regiment.
Lieut.-Colonel	Wilmer, J. R. ...	Survey Department.
Captain ...	Wilmot, I. Eardley, ...	D. A. A. G. for Musketry.
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Captain ...	Wilson, C. E. ...	2nd Durham L. I.
Lieut.-Colonel	Wilson, E. H. ...	34th Pioneers.
Major ...	Wilson, W. B. ...	12th Bengal Cavalry.
Colonel ...	Wilson, F. A. ...	Pol. Agt. Bundelkhund Nowgong.
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Captain ...	Wingate, A. W. ...	15th Bengal Lancers.
Major ...	Wingate, G. ...	Asst. Commissary General.
Major ...	Wintour, F. ...	Royal West Kent Regiment.
Major ...	Wood, E. J. F. ...	10th Bengal Lancers.
Captain ...	Wood, E. P. ...	20th Madras Infantry.
Colonel, C.B. ...	Woodthorpe, R. G. ...	R. E.
Captain ...	Woolcombe, C. L. ...	D. A. A. G. for Musketry.
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Captain ...	Wright, G. ...	R. A.
Major ...	Wright, W. B. ...	Midland V. R. C.
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Surgn.-Lt.-Col. M. D.	Wright, R. T. ...	I. M. S.

Rank.	Name.	Corps or Department.
Lieut.-Colonel	Wylie, H.	I. S. C.
Captain ...	Wylly, H. C.	D. A. A. G. for Musketry..
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Surgn.-Major	Yeld, H. P.	I. M. S.
Colonel ...	Yeatman-Biggs, A. G.	R. H. A.
Major ...	Young, E. A.	11th Bengal Lancers.
Colonel ...	Young, G. F.	A. Q. M. G.
Captain ...	Young, W. H....	Mily. Accounts Department..
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The Journal
OF THE
United Service Institution of India.

VOL XXIII.

1874.

No. 113.

**THE MATABELE AND ZULU CONFLICTS WITH THE CAPE
EMIGRANTS OF 1846-47**

By **Captain A. WALLACE** 57th Foot, Infantry.

A very interesting old book, now that it should have been thrown to the Matabels, and the operations of the hunter and hunter-trappers therein, is "The wild sports of southern Africa," by Captain W. H. Harris of the H. E. I. C. Engineers. It seems to have been a popular work, the fourth edition being published by F. and J. Hatchard & Co. in 1844. The title page goes on to state that it is the narrative of a hunting expedition through the territory of the Chief Moselele. This chief in 1847, the year that Captain Harris was there, had his capital at Moselele, in what is now the south-west district of the Transvaal. He was Dr. Hume's predecessor. And the book is extremely interesting, as it was also at this period that the Boers were making their migration into what is now the Orange Free State, and it gives an account of the encroachments that took place between the Boers and the Matabels, before the country now the Orange Free State was civilized and civilized; as well as of the encroachments between the Boers and Dingaan, king of the Zulus, before Natal was occupied. The events suggest comparison with those that have recently taken place. It is to be hoped, however, that it is true the Matabels did not drive the Boers away to the west as they were in those days, but that further to the west civilization advanced, and the Boers were gradually driven back to the Transvaal and Natal, and were eventually driven back to the Cape. Dr. Smith had travelled as far as the Orange River, and Dr. Hume, as far as Moselele, and Dr. Hume, as far as the Orange River. The chief did not object to them as long as they did not go where Dr. Smith had the right of way, and Dr. Hume, as far as the Orange River, or those who might be suspected of being

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The Journal
OF THE
United Service Institution of India.

VOL. XXIII.

1894.

No. 113.

THE MATABELE AND ZULU CONFLICTS WITH THE CAPE
EMIGRANTS OF 1836-39.

By Captain A. WALLACE, 27th Punjab Infantry.

A very interesting old book, now that attention has been drawn to the Matabele, and the operations of the Mashonaland colonists against them, is "The wild sports of southern Africa" by Captain W. C. Harris of the H. E. I. C. Engineers. It seems to have been a popular book, the fourth edition being published by Pelham Richardson, Cornhill, in 1844. The title page goes on to state that it is the narrative of a hunting expedition through the territories of the Chief Moselekatse. This chief in 1836-7, the time that Captain Harris was there, had his capital at Mosega, in what is now the north-west district of the Transvaal. He was Lobengula's predecessor. And the book is especially interesting, as it was also at this period that the Boers began their immigration into what is now the Orange Free State, and it gives a short account of the engagements that took place between the Boers and the Matabele, before the country now the Orange Free State was occupied and civilized; as well as of the engagements between the Boers and Dingaan, king of the Zulus, before Natal was occupied. The events suggest comparison with those that have recently taken place. It is to be hoped, however, that this time the Matabele, instead of being driven away north-west as they were in those days, to give further trouble as civilization advances, will settle down quietly to peaceful pursuits. The Transvaal and Mashonaland were even in those days not altogether unknown. Dr. Smith had travelled as far as the lakes, and an Englishman, D. Hume, as far as Mashonaland, in search of gold. Enterprising sportsmen found in Moselekatse's country a happy hunting ground. The chief did not object to them as long as they came by Kumman, where Dr. Moffat had his mission station, in Stella land. It was only the Boers, or those who might be suspected of exploring with a view to

occupying, who were opposed. At Mosega indeed, the chief kraal, Dr. Wilson occupied a mission house. Moselekatse appears not to have cared about living too close to the mission station, but instead of turning them out, had himself moved to Kapain a days journey north of Mosega. Captain Harris left Port Elizabeth in August 1836, left Kumman the 29th September, reaching Kapain where Moselekatse was, on the 26th October; it was on the 29th, or three days later that the Boers, encamped near the junction of the Valsh and Vaal, were attacked by Kalipi, one of the Matabele ministers. Between the end of September and the end of January, Captain Harris and his companion Mr. Richardson of the H. E. I. Company's civil service, had shot over 400 head of big game, of almost every variety known in north Africa, and also one variety of antelope unknown up to that time; but interesting as are his sporting reminiscences, they may be passed over in favour of his account of the operations of the Boers. For the information of the "little Englanders" who maintain that savage races are much better off and happier if left alone, and that missionary and colonial enterprise does them harm instead of good, a few extracts from the book are given. It must be remembered that Captain Harris, as an Englishman, was prejudiced against the advance of the Boers, whose sole object at that time was to escape from our government and set up an independent one of their own on our borders. "How truly," writes Captain Harris,—“has it been remarked by Captain Owen, that the state of those countries which have had little or no intercourse with civilized nations, is a direct refutation of the theories of the poets and philosophers, who would represent the ignorance of the savage as virtuous simplicity, his miserable poverty as frugality and temperance—and his stupid ignorance as a laudable contempt for wealth; widely different indeed were the facts which came under our observation; and doubtless it will ever be found, that uncultivated man is a compound of treachery, cunning, debauchery, gluttony, and idleness.”

This describes the state of one corner of Moselekatse's country—“We continued to advance to the northward, over extensive rugged tracts, strewed with numerous stone walls, once thronged by thousands, but now presenting no vestige of inhabitants. Wherever we turned the hand of the destroyer was apparent,

The locusts' wasting swarm

Which mightiest nations dread

is not more destructive to vegetation than he has been to the population of this section of southern Africa. We frequently travelled for days without meeting a solitary human being—occasionally only falling in with the small and starving remnant of some pastoral tribe of Bechuana, that had been plundered by Moselekatse's warriors. These famished wretches, some of whom had been herding the king's cattle during the absence of Kalipi's commands, hovered around us, disputing with vultures and hyenas the carcases we left, which they devoured with such brutish avidity, as scarcely to leave a bone to attest the slaughter.”

Again a little further on Captain Harris writes—"As we approached the junction of the Masiqua with the Limpopo.....the country daily became less inviting.....The few inhabitants that we now met with refused to hold any communication with our escort..... These men were the wreck of the Bakone or Baquaina, once the most powerful and prosperous of the Bechuana nations. Conquered by Moselekatse, however, and Cama their king having been slain, they fled to this part of the country, and are now reduced to an extremity of misery and want, little short of actual starvation—the emaciated forms of many too plainly testifying to their precarious means of subsistence.

What mainly led to the emigration of the Boers was no doubt the emancipation of their slaves. This was still more aggravating to the Boers because in consequence of this emancipation the colony became infested with swarms of vagabonds and the law was insufficient to protect the farmers from their depredations. Another reason having equal weight was the "insecure state of the eastern frontier, and the inadequate protection afforded by the English Government against the aggressions of their wily and restless Kathir neighbours."

Captain Harris animadverts on those "canting and designing men to whose mischievous and gratuitous interference veiled under the cloak of philanthropy is principally to be attributed the desolated condition of the eastern frontier..... To add bitterness to gall, they (the Boers) have been taunted as the authors of their own misfortunes, by those, who strangely biased by ex parte statements, have judged them unheard, at the distance of several thousand miles from the scene of pillage, bloodshed, and devastation."

An exploring party of Boers first proceeded to Natal, and being satisfied with what they saw, returned for their families. The first party of actual emigrants consisted of about thirty families. To avoid the Zulus they made a detour round the mountains separating Zululand from the Orange Free State of the present day; failing, however, to find a convenient way through these hills they went on skirting them and eventually found a suitable country near the head of the Vaal where they settled for the time being; this was at the end of May 1836. Their leader was Tricheard.

Many other Boers soon followed; they crossed the Orange river and marching on, settled themselves while events were developing, along the banks of the Vaal. Exploring parties went out from among these later emigrants, they visited the camp of the first party, and going on, reached a point but six marches from Delagoa Bay.

Moselekatse took umbrage at these proceedings. The flocks and herds of the emigrants were in any case too great a temptation for him to resist. Very soon, towards the end of August 1836, Moselekatse sent out 500 Matabele warriors, to harry and drive out the Boers, and to capture their cattle. On their way to the Vaal they fell in with Stephanus Erasmus, who had been hunting in the country north of that river, and was returning there. The rest may be given in Captain Harris' own words, though indeed the whole of this article is but a précis of what he writes.

"Arriving at his waggons in the evening with one of his sons, and finding them surrounded by a host of armed savages, he precipitately fled to the nearest emigrant camp, about five hours ride on horseback from his own, when having succeeded in persuading a party of eleven farmers to accompany him, he returned towards the spot. On the way thither, they were met by the barbarians, whose impetuous onslaughts obliged them to seek refuge within the encampment. A severe struggle ensued, but the enemy were finally repulsed with great slaughter, and the loss on the part of the farmers of only one man named Bronkhorst.

"This however was but the prelude to a more bloody tragedy. A party of the Matabele soldiers had in the meantime detached itself from the main body, and fallen upon nine other waggons that were assembled at a distance from the principal camp. The waggons were saved, but the greater part of the flocks and herds were carried off, and twenty-four persons massacred."

These included an English schoolmaster named McDonald, Mr. Liebenburg, Mrs. DeToit, four children and twelve black servants.

"Six days after the catastrophe Erasmus' curiosity prompted him to ascertain the fate of his family and property. Proceeding to the spot, he found the bodies of his twelve black slaves, and could distinguish the wheel tracks of his five waggons going in a northerly direction. Two of his sons, and a youth named Carl Krugler, had been taken prisoners, and it was afterwards ascertained, that having attempted to effect their escape, they were mercilessly put to death on their way to the king."

After this the Boers fell back a four days journey down the Vaal, and encamped there till the end of October 1836, without making any attempts to come to an amicable understanding with king Moselekatse. They then heard of the approach of a far more formidable force of Matabele. Retreat being impossible, they fortified their camp and then, be it noted, rode out to meet the enemy. Though killing many Matabele, they had to fall back and no sooner had they cleaned their muskets, than the savages were down on them. Fighting as they were for their lives, the Boers defended themselves bravely, and the Matabele assegais gave way before the Dutch muskets; 150 of the warriors were left dead or disabled on the field, while of the Boers, Potgeier and Botha were killed, and twelve other farmers severely wounded. The Matabele retreated but carried off six thousand head of cattle, and forty-one thousand sheep and goats.

The whole party retreated south to the country round the head of the Modder, a tributary of the Vaal. Here they were found by a strong party of emigrants under Gert Maritz, who got himself elected Governor General. The number of waggons assembled, amounted to about two hundred and fifty, the number of souls being estimated at above eighteen hundred.

Maritz' first step was to take revenge for the injuries the Matabele had inflicted. On the 3rd January 1837 an expedition consisting of one hundred and seven Dutch farmers, forty mounted Griquas, and

sixty armed natives on foot set out. Taking an unexpected route, this party at dawn on the 17th completely surprised Mosega the king's capital. The Matabele were hemmed in, and four hundred killed. The king was unfortunately absent and escaped. Had the Boers followed up their success, the king would probably have been captured, and peace assured; but they were satisfied with the capture of seven thousand head of cattle, and hurried back to the Modder.

The effect of the news of this victory is described as magical on the Dutch colonists. They swarmed out to join the emigrants from all along the frontier. In April, Piet Retief, who with a large cavalcade was encamped at a distance from Maritz, was appointed Governor and Commander-in-Chief. He appointed subordinate officials, enacted laws, and made treaties with the surrounding chiefs. The arrangements completed, they advanced to the scene of their former misfortune, and in May 1837 upwards of one thousand waggons and sixteen hundred efficient fighting men, with their wives families and followers, were assembled near the confluence of the branches of the Vet river. On the 14th August 1837 the Boers under Retief passed resolutions to establish a settlement on the same principles of liberty as those adopted by the United States of America, carrying into effect as far as might be practicable the Burgher laws.

The news of this same defeat had no sooner reached Dingaan, the Zulu king, and Moselekatse's hereditary foe, than he despatched an army to complete what the farmers had, in his eyes, so laudably begun. The Zulus however, after suffering severe hardship on a long march, were promptly met by the Matabele, and routed with terrible slaughter. This shews that both races were about equal in fighting power and morale.

To return to the emigrants. They became divided into three parties. The first were in favour of moving north and joining Treichard's party, settled at the head of the Vaal, and about the south-east of the present Transvaal; the second party were for occupying the country they had wrested from Moselekatse, the present Orange Free State; while the third under Retief proposed carrying out the original plan, to find a road through the Drakenberg mountains, and settle in the Zulu country round Port Natal. This passage was soon found and Retief and his followers found themselves in October 1837 within Dingaan's territories. The latter was approached with conciliatory messages, and some preliminary disagreements having been settled, Retief paid a visit of ceremony to the despot, and was received at Unkunkinglove, the Zulu metropolis, with much apparent cordiality. On the 3rd February 1838 Retief visited the capital for the second time. He was accompanied by sixty three Boers, with their "achter-eyders" or henchmen, making in all about one hundred men. The king bestowed upon them the whole of the unoccupied territory lying between the Tugela and the Umzimkula, the present Natal, expressing his pleasure that they should assume immediate possession, though he had already given it away some twenty times under similar circumstances. The king had however already resolved to get rid of such formidable neighbours, as

they were likely to become. He prepared a great carousal, in honour of the departure of this small party from his capital. On the pretext of his anxiety that they should take an active part in the festivities, the Boers were requested not to bring their muskets. Thomas Halstead a man from the settlement at Port Natal, who accompanied the party as interpreter, warned Retief that he had received intimation of meditated treachery. The warning was disregarded, and the Dutch were in the course of a dance surrounded by three thousand Zulus, who on a signal from Dingaan, fell on their defenceless victims, dragged them about half a mile across the river by the hair of their heads, and having first ostentatiously butchered Retief, fell upon the rest and despatched them with great cruelty. Halstead was skinned alive, and put to death with revolting tortures. The news of this massacre reached the English settlers at Port Natal, at the same time as intelligence that the king had despatched an overwhelming force to destroy the emigrant camp. Messengers were immediately despatched to warn the intended victims, but owing to the swollen state of the rivers, they did not arrive in time. "On the 17th October 1838, in the dead of night, ten thousand savages dashed pell mell into the slumbering camp, drove off twenty thousand head of cattle, and butchered between five and six hundred souls, without reference to either age or sex,—barbarously mutilating and cutting off the breasts of the women, and crowning the massacre by dashing out the brains of their helpless babes against the wheels of the waggons."

A rabble force of nearly one thousand English and native settlers, had marched from Natal to assist the emigrants, but arriving in the desolated camp too late, and finding that the enemy to a man, had repaired by the king's orders to Unkunkinglove, in anticipation of a general attack upon the capital,—they returned whence they came, with four thousand head of cattle, and five hundred female captives. To realize this booty not a blow had been struck, but it was afterwards retaken with ruinous retaliation.

The emigrants left behind in the present Orange Free State, were not long in resolving to make retaliation for the promiscuous and wanton slaughter of their countrymen. On the 6th of April 1838 a force consisting of nearly four hundred mounted Boers, from the second encampment, marched upon Unkunkinglove, under Piet Uys and Jacobus Potgeier. Entering Dingaan's territories from the westward, the invading force found the country depopulated, not the smallest opposition being met with until they arrived within sight of the capital, when they perceived the whole of the Zulu army drawn up on the heights for its defence. Two divisions were advantageously posted on some rocks, which formed a crescent across a long narrow defile, in which lay the road to the royal residence; whilst a third was placed in ambuscade, with orders to close in upon the rear of the attacking party, when it should have entered the cul-de-sac. The vast superiority of the enemy in point of numbers was not more apparent, than the excellence of these military dispositions, but the emigrants having resolved upon the assault, divided into two nearly equal detachments, and at once opposed themselves to those of the barbarian army.

"The horses of Potgeier's division took fright at the beating of shields and war whoops, it was thrown into irrecoverable confusion and routed at the very onset, the second division under old Uys being thus left to sustain a simultaneous charge from the whole Zulu host. The farmers were hemmed in, Uys and his son both fell, the former exclaiming with his last breath—"Fight your way out my gallant lads, it is my fate to die."

In the meantime the main body of the Zulu army had rallied and encompassed the comparative handful of Dutchmen on every side. The battle raged for an hour and a half. Directing their fire upon one point the farmers at last broke through, and retreated with considerable loss, leaving upwards of one thousand savages stretched upon the field. The Zulus pursued, but the country becoming more open, and many of them being shot, they retired. They left spies to hover on the rear of the farmers, and ascertain where they should bivouac. But the object of this manœuvre being perceived; a party of Boers concealed themselves in a high field of Indian corn, and intercepting these scouts, left not one alive to fulfil his errand.

On the same day, the 6th of April 1838, a force composed of about nine hundred men, natives and Europeans, marched from Port Natal to co-operate with the Boers. Its elements were feeble, scarcely more than half the men having muskets or ammunition. On the 17th they reached the Tugala river and attempted to carry a Zulu post situated under the brow of a bleak hill near that river. During the engagement the enemy were unexpectedly reinforced by the whole Zulu army twelve thousand strong. The Natal force formed a circle, those carrying muskets taking the front rank. A struggle lasting several hours terminated disastrously. The ranks were broken, and the Zulu hordes rushed in. Two thirds, including an Englishman named Biggar, and thirteen other of the principal European settlers of Natal were killed. Two hundred and thirty only survived to return, the Zulus having at the same time sacrificed three regiments, each about a thousand strong.

The Zulus now swarmed down on the settlement. The natives, principally deserters from Dingaan, took to the bush, where their women and children were mercilessly hunted down and speared. The few surviving whites, and those of the missionaries who had stayed, were able to take refuge with their moveables on board the *Comet* a brig which happened to be riding in the harbour at the time, an occasional shot having to be fired to keep back the Zulus from the shore, while the embarkation was being completed.

When news of these successive disasters reached the emigrants in the present Orange Free State, Maritz the only surviving leader, promptly exerted himself to obtain reinforcements from among them, designing to march at once to the succour of the remnants of the parties which had been led by Uys and Retief. About the beginning of May, Field-cornet Gideon Joubert crossed the colonial boundary to his assistance. They advanced to Natal, and having taken possession of the port in the name of the united emigrants, left a strong party for its protection. They brought away thence a long train of waggons, with which and a

considerable quantity of ammunition, they found their distressed compatriots, and finally encamped about ten hours ride from the bay in an open position, disposing themselves in such a manner as to be able to form a junction at the shortest notice.

The colonial government was in the meantime using their utmost exertions to stem the torrent of emigration, but without avail. Field-cornet Joubert had been charged by the government to report upon the condition of the emigrants, and to demand all the lately manumitted slaves, that might not be desirous of remaining with their masters at Natal. He was likewise made the bearer of overtures permitting the return of the farmers to the colonial dominions, and remitting all pains and penalties that they had incurred, by transgressing the laws against crossing the colonial boundary. The governor's proclamation to this effect was dated the 21st May 1838. It also promised that full investigation would be made into any grievance that might be reported, as well as all possible redress.

"Of this indulgence some few manifested a disposition to avail themselves, but the result of their deliberations being referred to their 'Vrows,' without whose gentle acquiescence nothing of consequence may be undertaken, the heroines promptly declined to retrace their steps until summary vengeance should have been wreaked upon the head of the merciless Dingaan, for the blood he had so wantonly shed."

Maritz's force amounted at this time to six hundred and fifty men capable of bearing arms. Their women, children and followers amounted to three thousand five hundred. With three hundred mounted whites, and four pieces of light ordnance, he proposed to have marched against Dingaan in the beginning of June, advancing direct upon the capital, and taking 50 waggons with which to form an intrenchment for security during the night. This plan was altered by the unexpected death of Maritz, and Landmann, who succeeded him, persuaded the farmers to put off the expedition to the following spring. Their horses, of which only three hundred remained fit for service, would by that time be recruited by rest and fine pasturage. They therefore fortified their camp and sent out strong patrols to watch the movements of the enemy, preparing themselves at the same time for the coming struggle. Early in the spring the Zulus began hostilities. One hundred of them appeared mounted on captured horses, but this contemptible cavalry was driven back with heavy loss, though not before the flocks and herds of the emigrants had been extensively despoiled. The Zulus in the meantime suffered at the hands of others, for their king, in anticipation of a Boer invasion, sent his herds into the interior under a strong escort. The bait was too tempting for the Matabele. Down they poured on their hereditary foe, utterly routed the Zulu troops and returned in triumph with their spoils.

The emigrants marched out to the attack under Andries Pretorius. Six hundred horsemen supported by four pieces of light ordnance formed laager on the 15th December, within a few hours ride of the capital. The enemy did not wait to be attacked. Ten thousand warriors surrounded the camp before dawn the following morning. A succession of

furious onsets were repulsed with great slaughter. The mounted pursuit that followed troubled the enemy's loss. Between four and five thousand Zulus are said to have been killed, and this victory which broke the Zulu power cost the emigrants only three farmers slightly wounded, Pretorius their leader being one of them.

When Dingaan heard the news of this defeat he set fire to his capital and fled. The Boers advancing found it deserted, but rescued some bullion, and captured four thousand six hundred head of cattle, besides guns and horses. The bones of Retief's comrades were also recovered and buried.

At the end of some days, intimation having been received of Dingaan's place of concealment, a party of two hundred and eighty men were sent out to hunt him down. They became entangled in some broken ground, and were suddenly surrounded by the remnant of the Zulu army, to the number of three to four thousand. The party was compelled to retire, losing four of their number and more than thirty of their Port Natal allies.

Not the slightest attention as will be seen having been paid by the emigrants to the governor's invitation to return to the colony, the government now proceeded to occupy Port Natal itself, and issued a proclamation to this effect on the 14th November 1838. It stated that the sole reasons for this occupation and erection of a fort, were to prevent Natal falling into the hands of any of the contending parties, and to keep the peace and prevent further bloodshed or strife; "and for such end the occupation shall be purely military and of a temporary nature, and not partaking in any degree of the nature of colonization or annexure to the crown of Great Britain, either as a colony or a colonial dependency."

The government in their endeavours to constrain the Boers to submission, cut off their supply of ammunition, and not only interdicted the exportation or issue from private magazines of this necessity of war, but seized all the ammunition that could be found by the British troops on their landing at Natal. A letter was also sent by Major Charters, commanding the troops at Natal, to Pretorius dissuading him from the commission of fresh hostilities. This letter was intercepted by the Volks-raad in their camp on the Tugela, who refused to allow it to be forwarded to its destination. No concessions, however, on the part of the government could induce the emigrants to abandon the prosecution of their plans.

Dingaan escaped with a remnant of his warriors, and took refuge with another chief on the Mapoota river near Delagoa. Unable to rally and his power subverted, he was obliged to sue for peace, sending indunas for that purpose to Natal in March 1839. A treaty was arranged with the council of representatives, the British commandant being invited to witness the ceremony. By its terms the land, originally ceded to Retief, comprising the present colony of Natal was for ever given to the emigrants, all arms, cattle, and booty captured by the Zulus were to be returned and friendly relations cultivated.

The British commandant interfered no further than to secure stipulations obviating further bloodshed, and while the government became no party to the convention, neither did it recognize the treaty as affecting in any degree the question between the government and the emigrants, as to their pretensions to independence.

So ends Captain Harris' narrative of the Boer emigration of which this is a précis. From it we learn what small numbers of determined men can accomplish, and to emulate their courage, fortitude and endurance. Not only in the men must we admire all these virtues, but still more must we do so in the case of their wives, who seem indeed to have exceeded their husbands and sons, in their patience and determination. While on the one hand the savages had no fire arms as in the present day, yet the difference in their equipments then and now is not so great, as between the Boers of those days with their muzzle loading muskets, and the Martini rifles and Maxim guns of to-day; and splendid as have been the operations of the Mashonaland settlers, they cannot eclipse the deeds of the emigrants of 1837.

Less self-evident lessons may also be learnt from Captain Harris' narrative. In these piping days of peace, too much stress is laid on mere theoretical principles. In writing military history, success is usually pointed out as depending on superior tactics, and moral superiority is only alluded to when success can be explained in no other way. In time, it would not be rash to predict, the moral condition of the troops will be recognised as the one important element of success. More or less superior tactics will, with fairly equal numbers, only be given such consideration as they may derive from their influence on the moral condition of the troops. One thousand are equal to two thousand men, when they look down on the latter, considering themselves equal to three thousand of them, and the latter are conscious of their moral inferiority. The oft repeated advice to Englishmen, not to despise their enemies, appears to be the worst that could be given. It is only by self confidence that we have made the Empire. We have had our reverses of course, but on these occasions, when told that they would not have occurred if we had not despised our enemies, perhaps not a few of the misfortunes were really due to an exaggeration of the enemy's strength. It is well that less importance is attached now to getting under cover, though it is scarcely perceived that the real objection to it is the deteriorating influence it has on the moral condition of troops who have that for their first consideration, and not to close with their enemies. What after all is the real advantage an attack has over a defence, but the moral superiority? There is no difficulty in understanding the feeling though it would take long to explain it, and all that goes to make it up. It is contagious for one thing, one man, a good leader, can imbue all under him with it, and lead them on, if not to victory, at least to a defeat the fruits and effects of which will be equal to one. For take the case of the emigrants. They suffered repeated defeats and reverses, yet in the end we see a single victory enabled them to crush each of their enemies. They indeed did not know when they were beaten. Their defeats were moral victories; the

Zulus feared and respected them more after, than before the engagements. Their reverses were far more glorious and fruitful in results than had the attacks been made with comparatively overwhelming numbers, before which the Zulus would retire without considering themselves beaten, elated indeed, and in better condition to fight than ever, when reflecting that such numbers were accounted necessary to defeat them. Perhaps in savage warfare more especially, to attack means success, to halt is dangerous, to retire fatal. The emigrants, through on the defensive in their laagers, were really an attacking force, as they were marching through the enemy's country, and his capital was their objective in each case. The lesson to be learned might be summed up in the words, Despise your enemy, attack him, and save life and treasure, at the same time making victory more effectual by not taking an overwhelming force, against which the enemy cannot be expected to stand,

What were Napoleon's proclamations to his army issued before each battle, but so many incentives to self confidence. Proclamations are not suited to our national temper, but we need not on the other hand consider too much the advice "not to despise our enemies." It may be well to avoid all possibility of a reverse, as is sometimes the case in our Indian frontier wars, but reverses must come, and a glorious reverse is more fruitful of good, than a victory in which no one takes any pride. Grant's holding his own with a handful of men, when surrounded, was the brightest episode in the Manipur campaign. The massacre of Cavagnari's escort at Kabul was more inspiring than the recollection of many a battle won. Wilson and his brave party in Matabeleland have perhaps been destroyed, but Lobengula will much more hesitate to renew an attack, knowing now that in case of defeat he would not merely have to beat a quiet retreat, but be again so energetically pursued that he might not have the luck to escape, as thanks to the rising of the Shangani he did the first time. Wilson and his men may have fallen, but their lives have certainly not been given in vain.

Circumstances are stronger than Governments. Wastes cannot be kept unoccupied, nor wealth left buried in the earth. The white man was made to rule; as it was in 1836-8 so it is in 1893-4, and there is every prospect of Mashona and Matabele land becoming as successful, and prosperous as Natal and the Free State now are.

DEFENSIVE IMPLEMENTS IN MODERN WARFARE.

Revue Scientifique 8th July 1893.

Translated from the French by Lieutenant R. A. BROWNE, 2nd Border
Regiment, Interpreter in French.

Public attention has recently been drawn to a sensational piece of news published by the "Neue Badische Landeszeitung" of Mannheim to the effect that a German inventor has discovered a combination of various textile substances which is impenetrable to projectiles from modern rifles.

How does this invention really stand? Should it be classed with those which science discusses only to discard, and which practice still more rapidly condemns? Or does it, on the other hand, come within the scope of practical consideration?

The fact is that we cannot as yet classify the bullet-proof armour invented by the tailor Dowe under either heading. We can, however, assert that *some* means of guarding against the frightful losses likely to be inflicted by Lebel and Mannlicher bullets in the next war is now being anxiously sought for. Small wonder then, that in the course of such inquiries the feasibility has been mooted of sheathing men in armour, as if they were so many ironclads, of reverting in other words to breast-plates and shields.

But of what material and of what dimensions should these breast-plates and shields be made?

The accompanying table will give an idea of the thickness required to enable even the most resisting metals to afford security from fire at long ranges.

Table showing the penetration into various substances of the Lebel, Mannlicher, and Lee-Metford Rifles.

Penetration into	French "Lebel."	German "Mannlicher."	English "Lee-Metford."	Remarks.
Sand	Not known	At 110 yards = 35-43 inches... " 440 " = 19-69 " ... " 880 " = 13-77 " ... " 1980 " = 3-94 " ... Thin brick walls traversed if same spot is struck more than once.	20 inches of fine loamy sand, moderately free from stones, proof at any range.	The penetration given for the "Lee-Metford" is that obtained when using cordite.
Masonry	3-54 in. at ranges under 60 yards.	Not known	2 ft. proof at all ranges	
Clay or Chalky parapet, not rammed	4½ to 6 feet at point blank range.	At 110 yards = 31-50 inches... " 440 " = 17-70 " ... " 880 " = 9-83 " ... " 1980 " = 1-96 " ... At 110 yards = 9-83 inches... " 440 " a plank 3-24 in. thick frequently pierced.	3 ft. 2 in. proof at all ranges.	
Fir	3 ft. 3 in. to 3 ft. 4 in. at 18 yards range.		24 inches proof at all ranges.	
Oak	27-56 in. at point blank range, a plank 1-18 in. thick frequently pierced at 2200 yards range.			
Sawdust	10 ft. 9 in. at point blank range.	3 ft. 2½ in. to 9 ft. 10 in. at point blank range.		
Steel plate 0-315 in. thick	Pierced up to 55 yards ...	Iron-plate 0-276 in. thick generally pierced up to 330 yards.	Milled steel-plate ¾ in. thick proof at all ranges.	
Ditto 0-394 ditto...	Ditto 33 " ...			
Ditto 0-473 ditto...	Ditto 16½ " ...	Chromatic steel-plate slightly dented at 55 yards (0-315 in. thick.)		
Cavalry breast-plate existing model.	Pierced up to 550 yards ...	Pierced up to 550 yards.		

As regards short distances, experiments at Gavres have shown that at the final ranges, say from 55 yards onwards, a thickness of $\frac{1}{4}$ inch of aluminium bronze, the hardest metal known, is required to form a bullet-proof breast-plate. We need hardly point out that a bullet-proof breast-plate of such thickness would have a weight quite out of keeping with the mobility and general activity essential to modern infantry.

Inventors of bullet-proof shields were the first to appear on the scene. Whilst admitting the impossibility of giving the individual soldier bullet-proof armour, they worked on the general idea of a protecting rampart, so to speak, to be carried in front of the fighting line by men specially detailed for that duty alone.

Thus Captain Von Holstein, of the Danish army, recently submitted to his Government a shield 6' 6" high by 3' 3" wide, composed of two steel plates each $\frac{1}{8}$ inch thick, set up one behind the other with an interval of 1·18 inch, and held together by metal bolts. The inventor holds greatly to this disposition of the plates. He considers that the passage through the first will deflect the bullet, so that it will strike the second plate at such an angle as to fail to effect any material penetration. The bullet, thus foiled, will lose the greater part of its "energy," and will finally fall harmlessly to the ground between the two plates.

In Austria experiments were made, three or four years ago, with a "company shield," consisting of a metallic surface 30' long by 6' 6" high, fixed on a cart drawn by four horses.

A French inventor, Monsieur L. Brun, has quite recently taken in hand the Holstein shield, merely substituting aluminium bronze for steel.

As against these devices the partisans of breast-plates were not slow to point to the weight of the proposed shields, the heavy transport they would require and the confusion they would probably cause in action.

Thus, given the width of the Holstein shield as 3' 3", an army corps assaulting a position on the frontage of a brigade would require about 1000 shield-bearers. But how should these men be brought on to the field, how arranged in front of the attacking line, and how are they to be guided from start to finish? Again, the shield-bearers would have to advance, without even being able to see to their front, across country and possibly over uneven ground, each man carrying a weight of about eight stone in front of him at arm's length. How would they do it? Would they not cause more delay and trouble than they afforded protection?

Accordingly the advocates of individual fire protection, convinced of the impracticability of company or other collective shields, pursued their researches of a material as resisting as, but lighter than, metal, which should afford the requisite protection from fire.

Little success has been met with in France, but in other countries we may note the breast-plate invented by an Austrian engineer, Carl Searnes, which stopped the Mauser bullet; that of the tailor Dowe, which the press of the whole world has lately discussed; finally an in-

vention of another German engineer, Reindl, which is reported to be even superior to that of Dowe.

Heinrich Dowe is a working tailor, born in Westphalia in 1859, and has been settled for some years at Mannheim. Dowe, who is a man of some education and of an inventive turn of mind, was some three years ago reading a history of Charles V, when he was struck by a reference to a bullet-proof felt discovered in the year 1500 or thereabouts by a Frankfort draper named Ostermann. This felt or padded cloth afforded a certain amount of protection to the wearer, and was used in the sixteenth century in the shape of "proof breast-plates" for a cavalry regiment called the Tuchträger.

Dowe, foreseeing in this scanty account a road to fame and wealth, turned the matter over in his mind so persistently that he ultimately abandoned the scissors in favour of a prolonged and persevering search for the desired materials. Working with alambic, crucible, and retort, he devoted himself to the complicated science of the laboratory, and succeeded in producing various protective substances which he tested privately against the Dreyse, Mauser, Gras, and Chassepot rifles.

At the end of last year (1892) Dowe considered that he had obtained results which justified his addressing himself to Colonel Von Oppen, commanding a grenadier regiment at Mannheim. Accordingly he laid his invention before that officer, requesting him to submit it to practical trial on the Kœferthal ranges, where the Mannheim garrison practises musketry. Colonel Von Oppen, who had already heard rumours of Dowe's invention, received him favourably and detailed Captain Ziegler of his own regiment to carry out the required experiments. This latter officer erected a number of wooden posts on which were hung 39 inch square pieces of Dowe's material, which were fired at, at various ranges, individual fire being used.

After a certain number of shots had been fired, it was seen that the protective material had been pierced through and through, but the bullets were found flattened out immediately in rear of the posts.

Such a result could hardly be called conclusive, but Dowe, no whit discouraged, set to work again and having made some improvements renewed a few weeks later his demand for practical experiments.

These were carried out, as before, on the Kœferthal ranges. Dowe had this time in readiness what he called his "bullet-proof uniform," that is, the breast-plate which he advocates for the infantry soldier. This may be described as a breast-plate made of his secret material, covered in front with ordinary cloth, on which a few metal buttons are sewn. This breast-plate is attached by hooks to the epaulette buttons and lower down is held in place by the waistbelt. The wearer cannot at a few yards distance be distinguished from a soldier in ordinary uniform.

Captain Ziegler had for this second trial formed a squad of marksmen, all non-commissioned officers, and the firing was conducted from the 220 and 440 yards points at wooden posts (as before) on which the breast-plates had been fixed in two different ways. Some had been so tightly bound to their posts as to form so to speak one body with them;

others had been merely tied on by their upper portions, in such manner as to *give* before the bullets, so as to represent, in addition to their own elasticity, the motion of a human body moving forwards or back.

The firing over, it was found. (1st) That in both arrangements of targets the bullets fired from the 220 yards range had just forced through the interior surface, so that they would have penetrated only $\cdot 079$ inch at the most, into the bodies of soldiers provided with the breast-plates. (2nd) That the bullets fired from 440 yards had remained in the breast plates without penetrating them. Such results created the greatest enthusiasm at Mannheim: the Emperor summoned Dowe to Berlin, and gave him leave to continue his experiments on a larger scale at the Spandau ranges.

These experiments, which are now in process of execution, have not been as conclusive at the shorter ranges as at the longer; however the details and method of their carrying out are as yet unknown. What we do know, is that the trials are still proceeding and that Dowe by no means despairs of making his breast-plate bullet proof *at a distance of 12 yards*.

There is no doubt that the breast-plate is made of some variety of felt, offering more resistance than either chromatic steel or aluminium-bronze, but the exact composition of the material is still unknown. Presumably, however, this will not long be the case, for modern science disposes of too many resources to allow the veil of mystery which now enfold this discovery to remain for any length of time unlifted. We know already for certain that the material is not stiff, but on the contrary possesses a considerable amount of elasticity; that it has a thickness of from 2.35 to 2.75 inches, and that it weighs roughly $7\frac{1}{2}$ lbs. to the square metre. These facts may help men of science in their researches.

Dowe is not however the only German who has entered on this field of discovery. Another inventor, Reinold by name, has lately submitted to the Emperor, under the auspices of General Kaltenborn-Stachau, War Minister, a breast-plate which claims to combine the resisting qualities of Dowe's invention with less thickness and consequently less weight.

We cannot indeed but admit that the infantry soldier now carries the maximum load which it is fair to put on a man whom we expect to cover all sorts of ground at all degrees of speed, to climb the stiffest slopes, to fire standing, kneeling, or lying down—in short to carry out the multitudinous duties pertaining to modern infantry. The adoption therefore of a breast plate weighing from 7 to 8 lbs. would entail the subtraction of an equal weight from the present equipment, but this again would be a matter of great difficulty, for the load is already cut down to what is absolutely indispensable. We cannot at present see how the question is to be solved, unless indeed it be by the adoption of some radical measure, such as transport of the knapsacks by the company carts recently introduced.

This would lead to great inconvenience and danger; the question however is too important to be pursued here.

II.

We have already remarked that the idea of a return to breast-plate and shield has been suggested by the ever growing necessities of finding some means to lessen the losses likely to be inflicted by modern rifles. In this connection we must note that the employment of smokeless powder will largely alter the conditions of battle.

Soldiers on the defensive will be able to aim with a precision hitherto unknown; there will be nothing to impede their view, nor will they be under any uncertainty as to the objective assigned to them. We must therefore expect an accuracy of fire which, even with the firearms of former days, would have largely increased the list of casualties.

Certain ingenious people, unbelievers in the resurrection of shield and breast plate, and struck by the effects of the absence of smoke have convinced themselves that in the production of that same smoke by other means lies a method of protection superior to those already described.

Everyone interested in viniculture knows that for the last thirty years artificial clouds or masses of smoke have been successfully used to protect the vines from the hoar frosts of spring. In Alsace, in the south of France, and in Médoc, such methods are in common use. By lighting, at certain times of the year, heaps of herbaceous and resinous plants, together with pitch and tar suitably mixed, the young shoots have been entirely protected. Hundreds of acres are annually saved from total ruin by this method.

A senior infantry officer, whose incognito we must respect, basing his arguments on the above well-known facts, has conceived the idea of making use of artificial clouds of smoke on the battle-field.

His proposals, though obviously open to the imputation of being likely to "end in smoke" are ingenious and novel.

It is clearly unnecessary for the object in view, to produce large smoke clouds, with a thickness of from 21' to 24' over a considerable area, such as are employed in the protection of vineyards. All that is required is a smoky veil from 6' to 9' high, with just sufficient density to hide the soldier momentarily from the view of his adversary.

On the other hand, while ample time may be taken in arranging for the protection of vines, the preparation and lighting of the smoke mixture on the battle-field should be instantaneous.

Commandant G.....has therefore invented the following mixture, easily inflammable by contact with a train of lighted gun-powder.

Saltpetre.....	12 parts.
Sulphur.....	3 "
Coal.....	2 "
Dry tar.....	4 "

A slow match is used to inflame the mixture.

To describe the process of manufacture of the "smoke cartridges." Dry tar, having first been partly liquified, is run into small paralleliped moulds of about the size of an ordinary packet of cartridges. In the cubical packet thus obtained would be left one or two cylindrical openings

occupying about the same space as that filled by an ordinary cartridge. These openings to be filled with the mixture of which the ingredients are given above, and in one of them would be placed a slow match, the outer end of which would just protrude from the packet. The whole to be covered with specially tinted paper, to avoid the danger of confusion with packets of ordinary cartridges.

According to the inventor's account, this cartridge will burn for one or two minutes, producing a cloud of smoke covering about two files in close order. In calm weather this cloud will remain stationary for some time. A light side wind renders it thicker by pressing it downwards, but diminishes its length of duration. Wind from front or rear moves the cloud without altering its density; a violent wind from any direction diminishes both its elevation and duration.

Commandant G.....proposes to provide each infantry soldier with a number of these "smoke cartridges." Should their use become necessary, the non-commissioned officers would collect from the ranks a number of cartridges sufficient to create a continuous cloud of smoke. They would arrange them at suitable intervals on the line to be covered, and then light them; any subsequent gaps to be covered by the ignition of fresh cartridges.

In this case, as in that of the bullet-proof breast-plate, we may remark that though the primary idea be ingenious, yet the method of its conversion into practice is not explained to our satisfaction. For we cannot but recognise that in the attack for instance, when a skirmishing line is advancing by short rushes against the enemy, the non-commissioned officers will have other work to do than to rush about collecting "smoke cartridges," arranging them at suitable intervals along the line to be covered, and lighting them.

We must, however, admit that commandant G——'s scheme, further worked out, might prove of some value. "Smoke cartridges" are merely a crude invention, which may lead to more useful developments. Most scientific discoveries have sprung from small beginnings. Practice and experience can alone bring out their latent value, if any, and this fact we should never forget.

From what we have said it may be gathered that the question of defensive implements in modern warfare is not very far advanced. On the whole, it would appear that the bullet proof breast-plate has most chances of eventual success. It almost seems as if this contemplated revival of feudal times had common sense to back it, and in any case we cannot afford to despise it. For to take an instance, if Germany should see fit, after the present experiments at Spandau have been completed, to adopt for her army the Dowe or the Reindl breast-plate, we should be obliged to follow suit, so as not to leave our enemy with the sole possession of what at the worst is certainly a moral element of success.

The adoption of the lance for the whole of the German cavalry has already forced us to restore to a portion of our French horse soldiers a

weapon, the value of which is but questionable. Who knows but that we may next have to pad our infantry, simply and solely because Germany has adopted the bullet-proof breast-plate?

Nations jointly and severally affect each other, and this as much by their mistaken, as by their successful innovations. But in the art of war, the experience of the battle-field alone decides the verdict. It is therefore on the whole wiser to accept a doubtful improvement than to run the risk of rejecting some really valuable invention.

In 1868 the artillery committee systematically rejected breech-loading guns. Surely this committee was largely responsible for our disasters of 1870, and who dares to deny it?

Let us then welcome the inventors, a race of men often of diseased imaginations, but often well ahead of their times and in any case always worthy of interest, for they represent amongst us that idea of activity, of forward motion, deprived of which mankind would soon cease to exist.

*List of Members who joined between 27th July and 31st
December 1893.*

Rank.	Name.	Corps or Department.
	<i>Life Member.</i>	
Lieutenant ...	Kaye, W. J. P.	R. A.
	<i>Ordinary Members.</i>	
Captain	Armstrong, T. W.	Dehra Dun Mounted Rifles.
Lieutenant ...	Batten, F. G.	1st Madras Pioneers.
Captain	Biggs, H. V.	R. E.
Lieut.-Colonel	Black, W. C.	1st Bombay Grenadiers.
Captain	Burrowes, H. G.	R. A.
Lieut.-Colonel	Carruthers, J. T.	16th Bengal Infantry.
Lieutenant ...	Close, L. H.	R. E.
Captain	Coates, J. U.	R. A.
Colonel... ..	Crawley, T. G.... ..	A. A. G.
Major	Crole-Wyndham, G. W.	21st Hussars.
Lieutenant ...	Dauut, W. D.	C. I. Horse.
Lieutenant ...	deLabilliere, E. G. D....	1st Roy. W. Kent Regiment.
Lieutenant ...	Fergusson, A. C.	R. A.
Lieut.-Colonel	Fletcher, A. F... ..	R. A.
Captain	Grimston, R. E..	A. D. C. to H. E. the Viceroy
Lieutenant ...	Grimston, S. B.	18th Bengal Lancers.
Lieutenant ...	Gunwing, C. J.... ..	1st Madras Pioneers.
Lieutenant ...	Hamilton, C.	2nd Bengal Infantry.
Lieutenant ...	Holland-Pryor, P.	13th (D. C.) Bengal Lancers.
Major	Keary, H. D'U.	31st Madras Infantry.
Lieut.-Colonel	Leckie, F. W. V.	19th Bombay Infantry.
Captain	Mackenzie-Kennedy, E. C. W.	1st Madras Pioneers.
Major	Pulley, C.	1-3rd Goorkhas.
Major	Reilly, R. E. D.	28th Bombay Pioneers.
Lieutenant ...	Rouse, A. H. T.	1st Madras Pioneers.
Major	Sorell, F. S.	5th Infy. Hyd. Contingent.
Major	Stephenson, T. E.	2nd Essex Regiment.
Captain	Stokes, A.	R. A.
Surgn.-Major..	Warlike, D. P... ..	1st Madras Pioneers.

The Journal
OF THE
United Service Institution of India.

Vol. XXIII. 1894. No. 114.

THE DOUBLE COMPANY SYSTEM.

By Lieut.-Colonel E. G. BARROW.

Readers of the United Service Institution Journal must by this time be rather tired of this hackneyed subject, but as the question is one of very great importance to the Indian army I trust the Council will allow me to make a brief reply to Colonel Young's article in the July number.

Colonel Young admits that "for general administration, for interior economy, for peace parade work, for musketry and other instruction, the double company system is not very far behind the company system; while of course cheaper" so that practically the rock we split on is the tactical question and that alone. But with reference to this, which is after all the main point in all military organization; the article I refer to makes a tremendous onslaught on the system which I have ventured to advocate. Personally I am a humble disciple of Colonel Young in this matter and I am quite ready to subscribe to any thirty-nine articles enunciating that there is no salvation save in the small British company. I have never advocated the substitution of the double company for the company in a tactical sense and I am quite sure that my former article on this subject never afforded text for a diatribe. Colonel Young has assumed that I wished to set up a new tactical nostrum and has then proceeded to demolish it. On the contrary, I am quite as convinced as he is that in our eight small companies we possess a distinct tactical advantage over the organization adopted by all other European armies and I am well aware that the highest military authorities on the Continent envy us in that respect. My object is not to advocate the introduction of new tactical formations but to substitute for the cumbrous wing system, one which (to quote Colonel Young) is for general administration, for interior economy, for musketry and other instruction not very far behind the company system. The double company in my opinion is a means to an end; *that end is the more thorough instruction of our native officers and men in peace time and their close connection in war with the officer who has so trained them.*

▲

We cannot afford either financially or politically to revive the old pre-mutiny system under which every company was supposed to have two British officers while the native officers were respectable dummies. I say that the native officer, of the infantry at all events, is as yet unequal to conducting the training of our men for modern warfare. With every desire to give the native officer independence in command of his company and to develop his military efficiency I say there is a limit to the independence which it is possible to bestow on him, a limit fixed by his early training and surroundings, his indifferent military education and the requirements of modern warfare, where neither bravery nor a long frontier experience will entirely compensate for a lack of scientific knowledge.

Prince Kraft says the company officers are "the soul of the instruction." Can this be reasonably applied to our native officers? Can any one pretend that they are "the soul of the instruction?" Estimable men and excellent drills as they often are, still they are not unfrequently uneducated even from a native point of view and have certainly had no special technical and theoretical training. Honestly speaking as a rule they are no better, except perhaps as regards personal influence, than British or German non-commissioned officers. If this view be correct we cannot leave instruction, especially in musketry and field training entirely to the native officer. That is to say we cannot take full advantage of our company organization, and are placed in exactly the same dilemma as the Germans were. They either had not the money or had not the officers to enable them to adopt the eight company system, and therefore contented themselves with a less satisfactory organization. We are in much the same position. We are unable to supply sufficient trained British officers to provide for the wants of an eight company system and therefore though we maintain the eight companies we are obliged to adopt some other intermediate organization to ensure the proper training and supervision of the battalion, and for this purpose to my mind there is nothing better than the double company though the name is unfortunate. For training purposes a pure company system is *impossible* and there is nothing for it but to retain the wing organization or to adopt the double company. For the reasons given in my former article I prefer the double company. It is a choice of evils forced on us by the backward condition of India and the necessity of preparing our infantry to meet a European foe.

It seems to be supposed that to abolish the company as the administrative unit is to kill it as a tactical one, yet we are told that in the German army the '*zug*' has already become the real tactical unit. That is to say a large unit, retained for purposes of training and administration can be sub-divided for tactical purposes. Instead of having three '*Zugs*' we would have two companies, each led and commanded by their own officers, but working together as much as possible under the officer who had trained them and knew them.

The new Drill book wisely abstains from laying down any prescribed form of attack but impresses on us the principle that in the attack men should, from the beginning to the end if possible, find

mutual support in bodies with which they are closely associated. The double company system is a direct aid to this idea. First we have the squad and the section getting intermingled then the company and finally the double company. That is to say, instead of two companies who have nothing to do with each other being thrown together for one tactical object we have the double company led by the officer who has trained them, and the companies of which by close association in barracks and on the exercise ground have learnt to know each other and work together. With nearly two years experience of the system I find this is distinctly the case. The men of the linked companies are constantly working together and consequently there is in every way a much closer connection between them than with any others. In fact they have become a corporate body so much so that twin-company far better expresses the relation between them than the otherwise objectionable word double company, and this fact I find very convenient in issuing order for an attack. I endeavour always to work by 'twins,' (if I may use the word). For instance the orders might be No. I. (twin) Right attack, No II. Left attack, Nos. III. and IV. Reserve. The objective and plan of operations are explained and each twin or double company moves out under its own leader to play the part laid down for it. Or again the orders might be No. I. to occupy hill A, and cover the advance by long range fire, No. II. firing line and supports, III. and IV. reserve, but though I endeavour, by giving to each twin company a distinct rôle, to obtain from it the full value of co-operation and of leadership under the officer who has trained it, yet the tactical unit remains the company, that is to say it is the company alone which works by word of command, just as the section is the unit of fire within the company, so is the company the unit of manœuvre within the 'twin.' The company commander, *i.e.* the native officer, retains the position for which he is fitted, he commands and manœuvres the company, but instead of being left to his own unaided initiative he works, as he has been trained to do, in co-operation with the linked company under the guidance of the officer who has trained both, and this to my mind is the only possible system under which, with our small staff of British officers, that mutual reliance between leaders and the led can be obtained which is so essential to success.

If this manner of employing the companies involves a tactical heresy which "on the battle field will prove itself a hideous delusion certain to be fatal in its consequences," then our whole system of breaking up a battalion at the moment of attack is utterly wrong. What we now do is to break up a battalion, telling off British officers at haphazard to supervise the various parts, the result is want of cohesion and co-operation, and worse still of leadership by officers not necessarily known to and relied on by those whom they have to lead. For this, the system of twin companies to a certain extent provides a palliative, and so far from destroying the tactical value of the small British company, to my mind it ensures those tactical atoms working to the mutual advantage under trained guidance. To say that such linking would destroy the individuality, the flexibility and the mobility of the com-

pany is no more true, in my opinion, than to say that the combination of battalions in a brigade or sections in a company destroys the value of those units for purposes of manœuvres or of fire.

Briefly I assert that the adoption of the double company system involves no change in drill or tactics, but that it simplifies the chain of command. The wing on the field of battle is an impossible subdivision, the twin company is not, Colonel Young says I wisely avoid the whole tactical side of the question! I reply there is no tactical question involved as far as the company is concerned, it remains the same. It is simply a question of how the battalion commander can most usefully employ his British officers in the field: at haphazard, or on a well defined and thoroughly practised system.

There is one other point made against the proposal: "that it involves the effect that one-half of our infantry brigade will be organised in one way, and the other in another!" But that is the case already, a British battalion and a native battalion even now are not organised alike, they are not even armed alike, a much more serious defect, and moreover as far as organization goes absolute uniformity is by no means essential to modern tactics. In the days of the Great Frederick absolute uniformity was necessary to ensure precision of manœuvres, but to-day I imagine there is no reason why a Prussian battalion and a Scotch regiment should not act together in brigade with perfect success provided the superior officers understood each other and the tactical object in view.

So much for the so called tactical side of the question. There is one other point which apparently has produced much adverse criticism, and that is the position I propose for the second-in-command. This is I know a very thorny question and I am not at all prepared to defend my proposal. It might be better to give him a double company, and there is much to be said on both sides, but in any case the position of the second-in-command is always more or less an anomalous one. As a wise old commanding officer under whom I served used to say:—"There are two things that always go wrong in a native regiment, the Quarter Guard Clock and the Second-in-Command."

NOTE.—I take this opportunity of correcting a printer's error in my original article. At page 160 of the May number the chest measurement should have been 35"33 and not as therein printed 31"33.

E. G. B.

SWIMMING THE RIVER WEICHSEL BY THE 1ST BRIGADE OF THE 1ST DON COSSACK DIVISION.

From Deutsche Heeres Zeitung, dated 11th November 1893.

Translated by Captain O. SHORE, 18th Bengal Lancers.

For the past two years we have regularly followed the attempts made by the Don Cossacks in this direction, and our readers will remember the experiments made with Apostoloff's canvas boats in the neighbourhood of the fortress of Ivangorod: they were constructed on the simplest lines; a large piece of sail cloth and some Cossack lances as ribs and stays, rudders being made by attaching the *Linnemann* spades to the lance-points (ends). These boats have been so highly approved of that the whole of the 1st Don Cossack division have been provided with them in the proportion of six to each regiment: (*i. e.* one per Sotnia). One boat proved capable of carrying a freight of 70 *poods* ($2\frac{1}{4}$ cwt.) or thereabouts in addition to its four rowers, so that the entire kit of a Zug could be packed in it, whilst the men swam their horses over by hand.

This year experiments in swimming rivers by cavalry have been carried out on a large scale. The Governor-General of the Warsaw military district, General Gourko, directed that the entire cavalry force of the district should practise crossing rivers before the commencement of the manœuvres, and the *Russki Invalid* gives us an interesting account of these operations carried out between the 23rd and 27th July. After a preliminary trial over an arm of the Weichsel on the 23rd the crossing of the river itself began on the 24th July. As a result of the abnormal height of the stream ($4\frac{1}{2}$ metres, 14' 4" about, over the normal level,) the breadth at the point selected for the experiment was 650 metres (about 711 yards), the rapidity of the current, 6 feet per second: It was decided not to swim over whole regiments at first, but rather to let volunteers and a Zug of each Sotnia try their hands at it.

Owing to the rapidity of the current these men had to swim some $2\frac{1}{2}$ *versts* ($1\frac{1}{2}$ miles) before they reached the opposite bank, whence they returned by means of rafts: this took so long, that it was dark before the last Cossack had returned to the right bank. It was accordingly determined that the entire regiments should swim on two successive days, the 9th Don Cossacks on the 26th July and the 10th on the 27th.

On these days the river had fallen somewhat: and the distance across in a straight line was only 550 metres (about 600 yards), depth 8 metres ($26\frac{1}{4}$ feet about), and current 6 feet per second: the stream was charged with a great deal of sand and loam from the Carpathians.

On both days the practices were carried out in the presence of the divisional commanders, and were similarly executed. The covering party, an advanced guard Sotnia, placed their saddlery, arms and clothing in the six boats carried by the regiment; (these boats were put together in 10-12 minutes and loaded in seven minutes more), they then moved off, officers leading, by threes from the right, at open files, and entered the water. Arrived on the opposite bank they rapidly dressed, saddled, and mounted, and advanced in the "Lava" swarm attack formation against the enemy supposed to be coming to meet them. The remaining Sotnias loaded their kit in hired boats, and swam the river, each Zug of 13 files, in column of Sotnias, by threes from the right, with an interval of 100 paces between sotnias.

In the 9th regiment several horses turned round and had to be brought on by the succeeding Sotnias: but the 10th crossed in perfect order and silence, each Sotnia accomplishing the passage in 8-9 minutes. It is worthy of remark that on the first day several horses who got separated from the rest by the force of the stream turned round and swam back: these were forced into the water again by their riders and made to follow the Sotnias: many of them remaining in this way as long as 30 minutes in the water.

The brigade and divisional commanders then crossed in a boat in order to inspect men, horses, and boats on the further bank. The men and horses were so fresh that it was determined to swim them back again and not cross them over by ferries as on the preceding occasion: this was accomplished in columns of Sotnias, and the regiments reached the right bank amid the acclamations of the spectators assembled in crowds to witness this unusual sight.

THE COSSACK "LAVA"

System of manœuvring and attack.

By V. MITKEVITCH.

Translated from the Russian Military Magazine, April 1892.

By G. H. B. McSWINEY.

Before approaching the subject of the present article, I will endeavour in general terms to draw the reader's attention to the conditions of the origin and life of the Cossacks in olden times, which may explain a good many important questions in reference to that body.

As is generally known, the Cossacks commenced to play an important part at a time when Russia, still young and weak, required her frontiers defended from the perpetual raids of the Tartars. Being composed of an energetic, strong, and daring people the Cossack communes carried on a continual struggle with the enemy in the name of their country.

Amid the alarms of military life and sanguinary wars with infidels, the Cossacks became morally and physically strengthened and acquired those invaluable military qualities which subsequently made them so famous. The shocks of historic fate, which so powerfully and continuously swept over them, failed to undermine or injure that robust race, and only produced a daring and enterprising population, deeply attached to its native soil, so besprinkled with the blood of its ancestors. Of course the amalgamation of the Cossacks, and the development of their distinctive qualities, proceeded slowly and gradually through centuries, as long as the existence of foreign foes gave scope for their daring and enterprise.

However, by degrees our native country duly reckoned with all her historic enemies, the bold Cossack raids against unbelievers ceased, bloody feuds subsided, and the Cossack put aside his gun and sword. Interest in military life commenced to wane amongst them, as they became allured by the attractions of more civilized life. The former bold raiders and ruffians so highly esteemed during the existence of external danger, now became undesirable under the established peaceful conditions of life.

But have we now, even in our own times, the right to suppose that the Cossacks have entirely lost their former qualities, or that they no longer represent the power they did in former days? Cossack peculiarities, comprising the spirit of daring, enterprise, and comradeship, were formed under the influence of external circumstances and conditions throughout the course of centuries, and it is therefore permissible to suppose that all the qualities cannot disappear during decades of comparative peace. Without entering into any preconceived notions,

one may come to the conclusion that even at the present time the Cossacks possess, although in less degree, the same invaluable fighting qualities so brilliantly displayed by them during the Fatherland war.

If, latterly, reason for complaint has been found against them as a fighting force, it is scarcely just to attribute it to any unsettled state morally, without remembering the circumstances amidst which they have existed during the past fifty years. We so thoroughly believe in the moral strength of our Russian people, that it seems strange to be talking of a decline in the fighting qualities of the Cossacks, who are representatives of the same flesh and blood. Would it not be simpler and more natural to seek for the faults in their education, and particularly in the instruction imparted to them when on service, which induce so many to regard them with such disapproval.

And certainly for whole decades past, the Cossacks have been looked upon as an anachronism, existing only by inertia and doomed to extermination, and the sooner the better! They have lived in oppression; no one took interest in them and, what is even worse, radically destroyed all that had been accomplished and perfected by them during long years of existence, and which gave them such originality of feature.

Of course such a system could not be productive, of good results at any rate from a military point of view, as, on the one hand they were being led on towards extermination, while, on the other, conspicuous deeds such as were achieved by their forefathers were expected from them. Fortunately opinion has changed of late in this respect, and the Cossacks having become recipients of Imperial favour, have commenced to breathe freely.

Be that as it may, it seems to us that the time has long since arrived when we should ask ourselves what the Cossack element is, what may be expected from it, and how to educate and train it? For this is a question of no little importance for Russia, inasmuch as the Cossack cavalry is numerically three times stronger than our regular cavalry.

The entire life of the Cossack element has been chiefly spent in waging war in small bands, which has created an individual warrior and partisan of the Cossack. That is his chief peculiarity, and that his sphere. It is from this point of departure, established on sound historical foundations, that one ought to look at him, and this main fact must be kept in view throughout the whole course of his education and training.

It may be argued however that owing to modern warfare something more is required of Cossacks than operation in small scattered bodies. At the present time of course one cannot confine oneself entirely to Cossack tactics historically worked out and it is absolutely necessary to train them in close formation and generally in all cavalry drill, without which they cannot be of reliable use in time of war. We certainly do not belong to that class of Cossack enthusiasts who desire to eliminate Cossack regiments from cavalry divisions and isolate them from the influence of regular troops, but on the contrary, in our opinion the enrollment of Cossack regiments with cavalry divisions would

considerably improve their economic condition, would raise them to a higher standard of discipline, and would serve as a valuable experiment in many branches of military education.

As already stated, the acquirement of the close formation system is also equally necessary for Cossack troops, and the more fully results are achieved in this respect the better, but still the strength of Cossack troops after all does not entirely consist in that, but in their operations in scattered order, and therefore for this reason the training of Cossack regiments in the system of close order drill, must be assigned a secondary place.

Undoubtedly on the outbreak of a European war, operations would commence with cavalry engagements when at the very outset our Cossacks would have to face the enemy's cavalry mounted on large horses, well trained, thoroughly suitable for making powerful and rapid attacks. Our regular cavalry being enrolled and trained on the general system of European cavalry can and ought in point of strength to be able to hold its own with an enemy's cavalry, but what can our Cossack regiments do, should they decide upon attacking in close order in the way they are now being trained? At present our Cossack regiments are being trained according to the general system in use for regular cavalry, and are taught the same regulations. The cavalry regulations certainly are supplemented by a few extra pages intended for the use of Cossacks, but which have scarcely any influence on their education or training for reasons to be explained—whereas if looked at with a total disregard of historical causes which have been the means of forming an individual warrior out of the Cossack, if one is to allow that they have now lost all their special features and do not differ from other sections of the national population, then nevertheless a number of most important causes will be found of a purely material nature, which prevent their becoming good mounted troops of the regular cavalry type capable of operating with strength and compactness of attack.

The reasons are these *viz* :—

1.—The Cossacks are mounted on small horses, and although forming excellent fighting substance, they have no speed for short distances. It is easy to imagine a picture representing a charge by an enemy's cavalry, not to mention the Cuirassier regiments mounted on large powerful horses against, for example, our Cossack Orenburg regiment mounted on their small shaggy horses with large heads, and thick rough legs, one must acknowledge, that all material circumstances would be against the Cossacks.—On the other hand, that very Orenburg regiment mounted on those unsightly horses, able to perform marches of 70 and more miles a day, may and ought to overcome its enemy, but in a different manner as will be explained below.

2.—The Cossack system of riding with snaffle bits, affording many invaluable advantages in comparison with the use of the curb, deprives Cossack close formation of that neatness and good order which is so essential when operating in large masses.

3.—The Cossacks ride horses of their own training, or more accurately speaking of no training at all, in fact horses only just tamed,

which of course prevents them (Cossacks) as far as close formation is concerned from attaining to the standard of regular cavalry.

4.—By the established Cossack recruiting regulations each Cossack comes on service with his own horse.

Cossack regiments are formed in a purely territorial manner, *i.e.*, the inhabitants of a stanitza (Cossack village) or group of stanitzas, are always enrolled in one and the same branch of the service. These two facts account for the total absence of uniformity in the horses as one Cossack will have a good steppe reared horse, while another may only possess one of the common peasant breed.—This want of uniformity in horses therefore, and the impossibility of establishing it, prevents the Cossack branches of the service from delivering the same close formation shock, or blow, which regular cavalry can, who are mounted on properly selected and equally trained horses.

5.—In accordance with the existing organisation, all the privileged Cossack troops, the number of which is double that of the first reserve on being placed on a war footing, are again reformed by Cossacks coming up to the mobilising depôts from their villages, the horses they bring with them are enrolled for service direct from grass. They are brought straight from the herd, quite emaciated from the poor winter keep, and are obliged to get into their work, and condition, while on the march to the seat of war.

This is also a reason in consequence of which one can scarcely demand from Cossack troops of the reserve at any rate, anything like dashing attacks against regular cavalry, whose horses are fed on dry food, and which are trained to close formation attack. From what has been just described, it is evident, on what a very erroneous principle the training of our Cossacks is based; which ignores their natural peculiarities, as well as material conditions which form the very foundation of the whole of their military service.

If it be admitted that the Cossacks having lost their former significance, can no longer be of use in action when operating in their own way *i.e.*, after Cossack fashion, then, as splendid material, they should be converted into dragoons, in which case it is necessary to fundamentally change the entire nature of the Cossack service, the system of service, its class of horses and use of snaffle bridle, otherwise, it will be impossible to do so. If, however, the Cossacks are to be allowed the right of even a temporary existence, then it is necessary to take account of their specialities in regard to horses, mode of riding, and all the consequences emanating from these points, which create obstacles preventing their being formed into good troops of the general regular cavalry type. Whereas at present, by leaving the Cossacks under their former conditions, which prevent their becoming cavalry capable of administering heavy blows, the whole of their education nevertheless tends in that direction, while the system of operation which is naturally bound up with their military organisation, is ignored.

So that in this way, at present, Cossacks are but slightly taught to operate by "Lava" in its actual sense, but not in the sense of its being only a special mode of attack, therefore, the system of close for-

mation as practised so efficiently by regular cavalry, cannot be adopted by them for the above mentioned reasons.

Cossacks now, have fallen away from their former types ; and have not amalgamated with regular cavalry.

"Having to hand," says Pistolcores, "such a wealth of tactical traditions, and fighting systems, acquired by the experience of eight generations of hard struggles with nearly all the races of both the Asiatic and European continents, instead of perfecting our own independent national cavalry tactics, and of forcing Europe to submit to them, we only imitate the artificial systems of inferior French and German cavalry. Every mode of operation in war perfected by a military people arises without artificiality, strictly in conformity with the national spirit and military surroundings, created daily not by theoretical cabinet considerations but by the blood and experience of thousands of warriors, thereby indelibly stamping the character, capabilities and enterprise of this military people."

So as to more fully harmonise the given capabilities of no matter what class of people, and to exact the utmost benefit from them, it is necessary to combine their future service with the specialities which formed their surroundings prior to entering on service, as, for example, with us, people who have been associated with navigation and fishing are enrolled into the navy, and those accustomed to the handling of horses, &c., are drafted into the cavalry.

This is why the organization and Cossack mode of action ought strictly to correspond with the natural peculiarities of this military people, which have been created by centuries, and have given them such original features.

The military qualities, adaptability and tactics of the Cossacks, which have naturally arisen from campaigning, must neither be ignored, nor be in any way interfered with, but on the contrary must be preserved and adapted to the conditions of modern warfare.

The historical Turkish cavalry, which at one time spread such terror throughout Europe, entirely lost its significance as soon as the hand of regularism was placed over it.

"The military organisation of every country," writes the renowned partisan Denis Davidoff, "ought to correspond with the national customs, habits, and inclinations, otherwise military leaders will be deceived in their reckoning. Nature is unconquerable, and dearly will those have to pay who dare for the sake of the success of their arms, to transform Turks into cuirassiers, and subject them to tactical formation and changes, or who rely on the safe guardianship of the camp by Europeans dressed in Cossack clothes.

That Cossacks have lost a good many of their natural qualities may be true, but it is nevertheless an undoubted fact, that the Cossack excels, and ought to excel, the regular trooper in single combat, otherwise he ought to be drafted into the transport. His horse is smaller, and consequently not so fast, although handier, lighter, and possessed of greater powers of endurance.

The Cossack being pre-eminently a single combatant, ought to operate in such formation as affords him the greatest liberty of action, and the use of his weapons, and such formation is the Cossack "Lava" not of course only in the sense as being a special form of skirmishing attack, but in the sense of manœuvring.

In olden times, the fighting experience of Cossacks derived from continual wars with foreign enemies was handed down by tradition, and every Cossack on entering upon field service in representing himself as a trained warrior, continued to perfect himself in his military duties while on service, which, owing to its duration he was enabled steadily to proceed with. But now when the military anxieties of the Cossacks have been relegated to a secondary place, when the Cossack terms of service have been considerably shortened, urgent necessity has arisen for teaching them the art of war. But, inasmuch as the authorities neither know nor understand what, or how to teach them, they have in the end taught them, or rather subjected them, to the regular cavalry course of instruction.

But the Cossacks had already worked out a capital system of fighting of their own, strictly in accordance with their natural instincts, and with the material conditions under which they have to operate.

The system of operating by "Lava" which cannot be moulded into any definite, or fixed, regulation drill, by virtue of its intangibility, is the principle reason for its having lost its chief significance amongst the Cossacks. The system of operating by "Lava" is continually changing, depending upon the individuality of commanders, the action of the enemy, and topographical conditions. They are as varied as life and war, and therefore will bear of no regulations.

But as the traditions of fighting experience for operating by "Lava" now scarcely exist, amongst the Cossacks, it becomes necessary to teach them this system of operation as accurately as regular cavalry is taught the mode of attack in close formation. It is essential to inspire confidence into the Cossack and to compel him to understand the immense value of operating by "Lava" against regular cavalry, but in everything else, however, to rely on his individual training and fighting qualities.

With the extinction of traditions of fighting experience amongst the Cossacks, the system of operating by "Lava" has gradually inclined towards a system of attack in skirmishing order, so much so that at the present time it is rare to meet with a body of Cossacks who while operating by "Lava" adopt the evolutions of the past. This process of obliterating the special features of "Lava," has progressed very forcibly since Cossack regiments have been included in the composition of the cavalry divisions, where on the one hand they have come in contact with firmly established regulations for attacking in skirmishing order, while on the other they had not a sufficiently well defined or matured form of their own historical system of operation, so that naturally, with the lapse of time, and under such circumstances, the system of operating by "Lava" became gradually forgotten, and more closely approached the regulations for attacking in skirmishing order; and

finally they have lost the difference in substance between these two perfectly distinct features of battle, and now all that remains is the difference in the mode of their execution.

What is now termed operation by "Lava" is simply the formation into single line, and, with the Cossack war cry, of immediately charging the enemy.

We have not the right of blaming our modern Cossacks as a mass, if in the 1861 edition of Cossack regulations, a thoroughly false and erroneous interpretation was given of "Lava" evolutions, a notion then, that it only implied a knowledge of attack.

But on the contrary, the present supplemented cavalry regulations for Cossacks, published in 1884, give an admirable definition of "Lava" and of the nature and characteristics of its operations, but unfortunately so briefly and indistinctly as virtually to remain a dead letter, and Cossacks continue to serve without properly understanding what their chief system of operation means. We repeat that at the present day all true conception of operation by "Lava" has been lost sight of by the Cossacks and by the great majority of them is understood merely to mean a special mode of attack, and of attack only.

Whereas in reality operating by "Lava" is a system of manœuvring against an enemy in close formation, with the object of exhausting harassing and of shattering it, or forcing it into a state of disorganization and at an opportune moment of decisively attacking it with cold steel.

In order to explain the features of "Lava" and to point out in greater contrast how erroneously they confuse it with skirmishing attack, we will compare the one with the other, if it be possible to compare two things so totally different.

"Lava" differs from skirmishing attack,

1.—In regard to its inner meaning—"Lava" is not an attack in the proper acceptation of the term, but is a system of manœuvring in open order culminating at an opportune moment in a decisive attack with cold steel partly in skirmishing order and partly in close formation, or more accurately speaking in "*beviés*" or groups. The skirmishing attack however is only an attack in the limited sense of the word, *i.e.*, a movement towards the enemy in open order so as to be less exposed to its fire and with the object of more speedily reaching the enemy. Hours have to be spent in manœuvring by "Lava," whereas skirmishing attacks only occupy minutes.

So that "Lava" is manœuvring with the object of preparing for attack, but skirmishing is only attack in the limited sense of the term.

2.—In regard to the object of operation.—Skirmishing attack by cavalry besides being adopted for the purpose of following up a retreat is only had recourse to against artillery, skirmishing infantry, and dismounted cavalry. The skirmishing attack of regular cavalry against closely formed bodies of horse is a totally unjustifiable action, inasmuch as operation by "Lava" is in that case resorted to. The adoption of the "Lava" system against artillery, infantry, and dismounted cavalry is incompatible, as for that purpose the Cossacks are taught the cavalry system of open formation, acknowledged by us, and other

European cavalry, as being perfectly suitable; the Cossacks therefore in reference to attacking artillery, skirmishing infantry, and dismounted cavalry being under the same conditions as the regular cavalry, can therefore attack in the same way. Of course under some circumstances artillery and skirmishing infantry, can be attacked by "Lava" which would amount to the same skirmishing attack, but not in double but in single line as is now practised by Cossacks when forming for "Lava."

3.—In reference to its management. The attack in skirmishing formation is executed by order of the commander, and it affords neither latitude nor initiative, either to individual horsemen, or to troop officers on taking their places appointed by regulations. The "Lava" ought not to be a mechanically joined line of horsemen, but requires to be broken up into small groups, acting of course with a greater degree of independence in executing the general plan of action emanating from the nearest commanding officer, and affording greater initiative and scope, not only for the commanders of these small detachments, but to each Cossack individually. The cavalry of Ghengis Khan and Tamerlane as well as the past Cossack cavalry had a system of decimal division, and divided themselves up into parts corresponding to leaders of ten, fifty, a hundred, and a thousand men, the attack of the smallest group was therefore held to be of the greatest importance. The centre of gravity of its movements, rested in the operations of the commanders of ten men.

4.—In reference to the use of arms. Mounted firing, when skirmishing is resorted to against artillery, infantry, and dismounted cavalry, is considered a breach of discipline, but firing from "Lava" when in action against the enemy in close formation ought to be practised to the utmost during the period of preparation, *i.e.*, during the manœuvring. Light cavalry of all nations, as for example the cavalry of Ghengis Khan and Tamerlane always fired from their saddles when operating by "Lava" when each horseman took into action ten, and every foot soldier thirty arrow heads.*

Why therefore should not our Cossacks armed with splendid rifles, make use of their weapons under similar circumstances. The Cossack "Lava" manœuvring against an enemy in close formation, and discharging a mass of bullets into its front, flank, and possibly rear, would crush any body of regular troops provided, of course, that at an opportune moment during the enemy's disorder, a decisive attack be made with sword and lance.

From the comparison just made between "Lava" and skirmishing attack it is evident they are two totally different things, and in much are quite incommensurable.

Possibly to a certain extent, the very word "Lava" prevents an accurate comprehension of the nature and character of its movements, which many are inclined to liken to volcanic lava which unrestrainedly forces its way forward, destroying everything in its course.

We here give an explanation of the word, which apparently seems a natural one, but for the authenticity of which we cannot guarantee.

* "The military art of Ghengis Khan and Tamerlane," by Ivanin.

The word "Lava," is we believe of Eastern origin ; the ancient Mongolian language possessed the word "Laou" which being interpreted, means an inward movement towards a centre, retiring from skirmishing order to one spot, to one object.

As the system of manœuvring by "Lava" was adopted by the Cossacks from the East, it is consequently natural to suppose, that the name was taken from thence. The accepted meaning of the word "Lava" signifies an outward movement from the centre, or at any rate a movement in line. The Cossack "Lava" however, in the strict sense of the word, consists in operations from a circumference towards a centre, or in other words from a periphery inwards, and in no case can it mean a straight lined unrestrainable forward movement.

We will now turn our attention to the further characteristics of "Lava".

Regular cavalry is strong in close formation, but weak in single combat whereas, Cossacks are strong in single combat and weak in close formation owing to their stamp of horses, their want of training, uniformity of size and use of snaffle.

One of the chief guarantees of success in action, consists in avoiding the blows from the enemy's strong quarter, and of striking it at its weakest point.

This is what the Cossacks did in the war of the Fatherland. Being thoroughly conscious that for many reasons it was difficult for them to cope with regular cavalry in close formation they, in order to avoid being repulsed by impetuous attacks and in order not to afford the enemy a mark for attack, or to enable it to make use of its strongest point against them, scattered themselves into "Lava" beforehand, and commenced preparing for the blow they were to deliver, with the ultimate aim under favourable conditions of attacking it with the sword. All sorts of artful tactics were then resorted to, so as to force the enemy to divide, and scatter, to be drawn towards an ambuscade, or cause it to be brought under an attack from our regular cavalry ; at that stage every thing depended on the judgment, dash, and initiative not only of junior officers, but on the Cossacks individually.

It seems to us, that the mode of operation by "Lava," culminating in a decisive attack at the proper moment, bears much resemblance to other properly conducted systems of fighting, inasmuch as at first preparation for attack is made by means of artillery and infantry fire, so as to inflict material loss and moral shock upon the enemy, after which an attack is made with side arms. That which might fail to be achieved without the preliminary preparation of opening fire, has great chances of success after such suitable preparations have been duly made, and so it is with the Cossacks. *Manœuvring* by "Lava," is preparing to inflict the blow. *Attacking* by "Lava," is the onslaught made with cold steel.

Every properly conducted engagement is composed of two phases,

- 1.—Preparation for attack.
- 2.—Actual attack.

What has regular cavalry with which to prepare for attack? Nothing or next to nothing. We are here talking of cavalry alone, without artillery. The chief feature of cavalry in point of tactics writes "Glazoff" consists in its not having any *preparatory* period in its fighting, but only a *final*, i.e. the attack. It has either to sacrifice itself by rash charges when necessary to save itself or other troops, or to seek and wait for a favourable moment for attack. Hence the dependence of cavalry on other branches of the service (dependence) or chance accident affording it the right of being called the suitable weapon of the moment.

We see a totally different thing in the operations of irregular cavalry, which has been able to create that preparatory period in an engagement, absent in artificially trained mounted troops. It is in this therefore that the centre of gravity of Cossack action ought to be involved, enabling them to speedily prepare for the delivery of their blows, whereas regular cavalry has passively to await the moment for making its attack. The power of this preparation ought at the present time to increase in the most decisive manner, inasmuch as Cossacks being armed with splendid rifles ought when operating by "Lava" to utilize their fire to the greatest possible degree.

As is known, "Lava" consists of an extended line of Cossacks, moving three or four paces from each other, so that the whole line of "Lava" troops is equal to three times its frontage in line. A little in rear of the "Lava," follows a small group serving as a base, or nucleus, to the remainder of the troop engaged, bearing with it the troop flag by the aid of which the officer in charge, unable to direct the "Lava" by word of command, is enabled to signal the various manœuvres he wishes his troops to execute. In this way each Cossack being widely scattered in "Lava," can turn his horse, and with facility operate with his weapons.

In consequence of the great length of the Cossack "Lava," it can easily extend its operations against the flank, and even rear of the enemy, and by virtue of its *thinness*, the charges in close formation do it no injury, for the reason that it does not receive them.

We will imagine a body of regular troops in close formation, and we will suppose it to be a squadron opposed to a Cossack troop in "Lava."

What can the enemy have recourse to?

It can operate against "Lava" in three ways.

1. By charging in close formation.
2. By skirmishing.
3. By opening fire while dismounted.

I.—We will assume then that, upon the squadron's and the Cossack Lava's approach, the former executes a charge against the Lava's centre, with the object of breaking it. The Cossacks facing the front of the squadron, without receiving the attack, retire scattering themselves more widely than ever. The squadron in close formation advancing the while further into the Cossack "Lava" and which, with hardly any manœuvring on the part of the Cossacks, will become sur-

rounded or hemmed in, by the "Lava" on two sides, and the more energetically the squadron continues to advance, the more entirely will it become surrounded on flank and rear. Finding, at last, that the pursuit of individual Cossacks leads to no definite results, it wheels round, and advances against one of the "Lava" flanks from which the Cossacks fire into it from their saddles. On the squadron's nearer approach they scatter, and commence retiring, firing backwards at them at full gallop. The Cossacks of the "Lava," centre who retired before the squadron's attack and those composing the Lava's other flank commence bearing down upon it, and firing into it. Threatening at any moment on the first sign of disorganisation to charge home with their swords. After delivering several ineffectual blows during which time several bullets have found billets, a lack of confidence and a sense of helplessness creeps over the enemy. From that moment its fate is sealed as the more desperately it continues the attack, and the more stubbornly it endeavours to attain its object, the more surely will the Cossacks, exhaust it, and having prepared their attack by materially and morally disorganising the enemy they attack home with lance and sword.

II.—We will assume that the enemy having become fatigued by fruitless pursuit in close formation after Cossacks, determines to attack the "Lava" in skirmishing order. Having decided to do so, the enemy (squadron) instantly deprives itself of its chief source of strength and exposes its weakest part by engaging in single combat; in which the Cossacks ought to possess undoubted superiority. In that case the "Lava" operation is attained, and the Cossacks have only then to charge home into the enemy with sword and lance.

III.—Finally, we will assume that the enemy favoured by topographical advantages, desires to operate against "Lava" by dismounted fire. In that case, the Cossack can attack with cold steel, especially if the enemy could still be caught dismounted, or attack those holding the horses, or can even dismount themselves where local conditions permit of so doing.

The significance of the circumstances just considered, of an engagement between a squadron of regulars in close formation, and a Cossack troop in "Lava" remains the same even though larger bodies of troops be engaged, for should the squadron of regulars deploy into two lines, in echelon, then the "Lava" can also be formed into echelon, or have wing columns on one or both flanks.

In this way "Lava" is a capital means, or system, of operating against regular cavalry, which has no means of successfully struggling with it. It is not necessary for every Cossack operating in "Lava" to possess any exceptional courage, or spirit of daring, as being in comparative safety, the security of his position would rather tend to make

him bolder and more venturesome. During the Fatherland war our Cossacks used singly and in groups to ride almost up to the enemy's front and then open fire.

The system of operation by "Lava," like every thing else in the world has of course its weak side. In order to create a terrible weapon out of the individual actions of the Cossacks in "Lava" it is necessary for each Cossack to execute his duties as well, and courageously, as possible. At the same time the supervision over individual Cossacks owing to the wide area over which they are scattered is minimised to a degree, and the troop to a certain extent gets beyond the control of its troop officer, and for this reason, there is the danger lest Cossacks under adverse circumstances being cut off from the immediate influence of their officers, should retreat.

This is undoubtedly one of the weakest points of this system, and in the event of the Cossacks being insufficiently prepared may lead to grave results.

But to avert that, the most serious attention has been bestowed on the individual development of each horseman, in regard to dexterity, dash, and enterprise, which perfected in the existing military fraternity of the Cossacks, has effectually removed this danger, and each troop when operating even in the most scattered manner, represents a closely united body. The watch word of every Cossack being, "Never to desert his comrade."

With reference to the actual operation by "Lava," as already stated, it has by Cossacks and other equestrian people, been divided up into groups, and links, which have been led by separate officers.

In reference to the individual preparation of the horseman, the Cossacks have acquired and perfected a system of skilful horsemanship. At present the important training significance of skilled riding for producing bold, dexterous, and dangerous individual antagonists appears somehow or other to have diminished, and has degenerated in some Cossack regiments into mere individual feats occasionally executed for the purpose of attracting public notice, instead of being daily exercised in horsemanship for all bodies of Cossack troops.

On examining the nature of the "Lava," we see that the chief thing in operating by this system must be the individual preparation of the horseman, with the object of forming him into an active, bold, and dangerous foe in single combat, that the military training of Cossacks should be conducted so as to develop individual dash, self confidence, and enterprise, and not a massing and mechanical forming of Cossack bodies of troops, under which conditions they would never be able to overtake regular cavalry for the reasons aforementioned.

The feeling of military brotherhood, existing in the fullest sense of the term, combined with the spirit of comradeship, and the use of all things in common, represented amongst Cossack troops by virtue of their system of organisation, are all developed in an infinitely greater degree than is the case amongst bodies of regular troops which are composed of total strangers.

Therefore, operations in scattered order, a risky proceeding with regular troops, can be freely adopted in Cossack regiments, without the fear of their becoming disorganised at the end of such tactics. The mechanical formation and compactness of regular bodies of troops representing a guarantee for their success in action, ought by the Cossacks to be substituted by a constant readiness to scatter themselves out as thinly as possible for the purpose of operating individually.

The welding together of Cossack levies, is established alike both historically, and by their social organisation, and emanated during the rough and hard times of their fighting existence which materially aided in creating a spirit of military brotherhood. The large measure of independence, free action of the local administration, (Cossack circles) material abundance, and absence of serfdom, produced in the Cossack a man possessing a great feeling of self esteem, independence and egoism. There is nothing a Cossack will not face, once his sensitiveness has been assailed.

The above examination and deductions made, and arrived at, as to the merits of operation by "Lava" against close formation, may by many seem unconvincing owing to its theatrical character.

We will see however what our enemies say about Cossack tactics.

The war of the Fatherland in this respect affords an enormous test, in which our Cossacks had to encounter splendid regular cavalry, led by most able commanders.

This is what Moran one of Napoleon's best generals writes about the Cossacks.

"The movement of the great French army was retarded by the Cossacks; cutting it off from all aid, they continually, and with great violence attacked her flanks like infuriated bees, whose innumerable stings exhaust the lion". And further, "What a beautiful sight that European cavalry presented, with its lines spread out along the banks of the Niemen glittering with steel and gold in the sun's rays of a June day, radiating with martial fervour and courage."

"What a bitter recollection remains of the useless and exhausting manœuvres it adopted against the Cossacks, at first so despised, but who achieved more for the saving of Russia, than the entire army of the Empire; daily were they to be seen on the horizon stretching away in line over an enormous area, and many of them used to dart up to our very ranks. We formed, and advanced upon that line but as soon as we approached, it melted away, and again the only things remaining visible on the horizon were the birch and pine trees, but after the lapse of an hour while our horses were being fed, the attack was recommenced and their dark line would again appear and the same manœuvres were resorted to leading to the same results. And it was in this way that the best and bravest cavalry became exhausted and worn out, by people it deemed unworthy of reckoning as foes, but who however were alone able to save the empire, which found in them its only support and sole liberators. To complete our sorrow, it must be added, that our cavalry out-numbered the Cossacks, and was supported by the lightest and bravest of artillery." &c., &c.

"And notwithstanding all this the Cossacks, covered with fame, and obtaining rich spoil, returned to the fertile banks of the Don, while in the meantime the fields of Russia were strewn with the bodies and arms of our soldiers, so valiant and intrepid, so devoted to the glory of our country. That is what organisation means! That is what Ghengis Khan's secret of victory consists in!" &c. &c.

The author undoubtedly is carried away, in his estimation of the part played by the Cossacks in the war of the Fatherland, but this very enthusiasm, shows what a terror the Cossacks were to the French army generally, and to regular cavalry in particular.

The military genius Ghengis Khan created a system of military operations, which was tested and perfected by him and his successors through a series of sanguinary wars—everything encountered in the path of this great conqueror was destroyed by his invincible cavalry not only owing to the indomitable courage of his troops, but in consequence of the deeply thought out military organisation, and system of operation adopted by his cavalry, which comprised the chief strength of his army.

The bravery of our princes, and their militias at the engagement by the river Kalka, and during the raids of Batia, was not less than that displayed by those Mongolian conquerors, but what was the end of it nevertheless? The courage and daring of this cross-bearing militia aroused by religious fanaticism, probably even surpassed that of the Saracens, who likewise operated by "Lava," but how did most of their encounters end? The knights of central Europe in their struggle with the Turkish and Hungarian cavalry, operating on Ghengis Khan's system, only served for their more certain destruction. There was not less courage, and self sacrifice in Napoleon's cavalry in 1812 than was possessed by the Cossacks, but we nevertheless know the result of the struggle.

The Cossack system of operation in 1812, does not present us with anything new. On the contrary having incessant encounters with Eastern people, they acquired it from them, and with the lapse of time commenced to vanquish their enemies with their own weapon.

This faculty of imitating and acquiring the enemy's good points of organisation, of adapting themselves to the prevailing surroundings and of extracting the utmost benefit from them for future success, forms one of the most typical features both of our people, and of the Cossacks. Their daring and natural capacity vanquish the enemy on the battle field, and their fortitude and innate kindly disposition subjugate the hearts of the hostile population. This is where the great assimilating power of the Russian people is centered, which has swallowed up so many tribes and races.

Many military people, having the opportunity during war time of becoming acquainted with the systems of operation practised by equestrian people, come to the conclusion that light European cavalry ought to learn much from its uncultured opponents, and would do well to imitate them. De Brac who took part, in so many of Napoleon's wars and had himself experienced the Cossack tactics of 1812, recom-

mends, in the most strenuous manner, that light cavalry should be trained in the Cossack way.

Whereas we, the possessors of such a vast natural cavalry and able by it to crush every foe, as we defeated Napoleon, ignore the very system of Cossack operations, which created their fame, and which was such a terror to their enemies. Without properly realizing what a Cossack really is, or what his peculiarities are, we soothe our consciences with the idea that he must best know how to act in time of war, and only teach him close formation drill as adopted by regular cavalry.

The opinion long expressed is, that in war time troops do what they are taught in times of peace. That of course is also applied to our modern Cossacks, who have lost their fighting traditions and natural school—war, which had to be exchanged for a training under peaceful conditions.

How did the Cossacks prepare themselves for the war of 1812?

The renowned hero of the Caucasus—Baklanoff, in the reminiscences of his childhood says, that on the news of Napoleon's advance in 1812 the Cossacks who had assembled or joined the colours, even while still at their stanitzas (villages) used to practise all the evolutions usually adopted by them in war time, *i. e.*, formed into "Lava" for attack, and with their war cry, charging with the lance, scattering, executing feats of horsemanship, and firing at the gallop.

Now nothing of the kind exists, or if it does it is only on paper, can it be expected, therefore, that the Cossacks under their present system of training, should be able to achieve the fame of their ancestors?

In view of this, in our opinion it becomes as necessary to train Cossacks to operate by "Lava" just as carefully as regular cavalry is trained to operate in close formation; it is necessary to bestow the most serious attention on the individual development of the Cossack, and to inspire within him a feeling of confidence, so that by following the example of his ancestors, in remaining invulnerable in the face of regular cavalry, he will be able to overcome all obstruction. One must therefore not take the standard measure as a criterion in estimating the training of Cossack troops as is everywhere done in the present day, but the individual training of the Cossacks, and their power of harassing by "Lava."

When Cossack troops are capable of operating by "Lava" as skillfully as regular cavalry operate in close formation, then we are convinced they will exhaust, rout, and annihilate, all cavalry opposed to them, and that, not in consequence of superior prowess, but solely through the merits of a deeply thought out system of operation perfected by an equestrian people through centuries of wars.

With regard to the time necessary for the careful training of Cossack troops in "Lava" manœuvres, there can be no difficulty about that, as Cossacks come up for service already partially trained, and do not go through the riding school which takes up so much of the regular soldier's time. Then after the establishment of an accurate and systematic training, to act as a substitute for the lost traditions, we will again see the Cossacks in the zenith of their glory, fully justifying the hopes

imposed upon them by their country. Until such time however, we have not the right to expect the former fighting significance of the Cossacks, and we shall reap that which we now sow.

In the last wars the Cossacks did not distinguish themselves in any exceptional way, but is it possible that such fact is to be attributed to a want of courage and daring? We do not, and cannot believe that, otherwise they ought to have been struck off the roll of our military forces. The cause of it is, that during the last wars the Cossacks did not operate in Cossack fashion, but after the method of regulars, *i.e.*, on a system quite unnatural to them and one in direct opposition or contradiction, both materially, and morally, to their cardinal principles and instincts.

The following fact will serve as an example showing to what extent we deceive ourselves in regard to the training of our Cossacks. As is well known the Cossacks now-a-days are compelled to follow the general cavalry regulations, and of these, only two special forms exist: (1.) For the individual training of Cossacks, (Part I), and (2) a supplemented form of cavalry regulations for the use of Cossacks, consisting of but a few pages. The first part of the Cossack regulations, published in 1875, has up to the present undergone no alteration or revision.

In Clause 225 of the present regulations for Cossacks, rules are given for loading when firing mounted, on the assumption that the Cossacks are still armed with *muzzle loaders*!—to wit. This little book at present is scarcely ever seen, and consequently in individual preparation, the Cossacks are practically trained by the regulations for regular cavalry. It is of no use blaming the Cossacks, or to expect favourable results from such a system of training.

From the above mentioned facts we make the following deductions.—

(1) Historical causes, as well as the conditions of custom, have created an individual warrior of the Cossack, and not a leg-dressing horseman, able only to attack in close formation; and therefore the formation in which he will operate in war, ought to afford the Cossack the opportunity of utilizing this his strong side as much as possible; his training therefore ought to be carried out mainly with that object in view.

(2) The training of Cossacks in close formation drill is necessary (a) for attacking infantry, (b) for attacking weak or disorganised regular cavalry (c) for administering a shock to the enemy should it be caught unawares, in which case manœuvring is useless and a charge with the sword should be made without a moment's delay.

But it must never be forgotten, that close formation order based on strength and impetuosity of attack, is in direct opposition to the material conditions surrounding Cossackhood (the kind of horses, their want of training, uniformity, and use of snaffle) preventing it from being formed into good charging cavalry of the general regular type.

The partisan Denis Davidoff tersely remarks, that the chief thing to be feared is the transforming of Cossacks into "Europeans dressed in Cossack clothes", as such Cossacks will be worse than Europeans, and therefore very much worse than Cossacks.

(3) In view of this, Cossack troops ought and have the indefeasible right of being taught to operate by "Lava", their own system, which has proved its merits in the struggles of the Cossacks with the best regular cavalry of Europe.

(4) In estimating the efficiency of Cossack troops for war, one must not apply the standard rule as a criterion but must take the extent of their individual preparation and the amount of skill displayed by them in manœuvring by "Lava."

(5) That being the case, the training of our Cossacks must be abruptly and decisively changed towards everything that forms their special system of fighting, in order to do which, it is necessary to revise the regulations for the individual training of Cossacks, and to have special rules published for "Lava" operation, underlining the fact,—that in it, rests the very foundation of Cossack regimental training.

Latterly our regular cavalry having to a certain degree alienated itself from Western types has taken an independent line of self improvement, and is now progressing in some departments of military education, even in advance of mounted European troops.

Its transformation into dragoon cavalry, and endeavour to extricate fighting problems on the battle field from confined limits, with the object of enlarging its sphere of action in the execution of any such problems likely to be encountered at the seat of war, has all tended to create new views with regard to the training of cavalry in times of peace. Good seed has fallen on favourable ground, and as a consequence will no doubt bring forth good fruit. We do not devote the requisite attention to our vast Cossack cavalry which is numerically three times larger than our regular cavalry, neither do we endeavour to train it for war in accordance either with its natural, moral, or physical qualifications. Whereas amid the abundant military talent existing amongst the Cossacks, combined with the peculiarities of their service, one would have thought that any fixed, or stereotyped form of training, or endeavour to prevent their being trained in the spirit of those peculiarities which they so brilliantly manifested in the not so distant past Fatherland war, would have been out of place. We are thoroughly convinced that once Cossacks are trained and educated in strict harmony with their natural and material peculiarities, that once good seed is sown, good results will be reaped and we shall again, as of old, see the Cossacks famous, and representing one of the substantial elements of our military organisation.

The Journal
OF THE
United Service Institution of India.

VOL. XXIII.

1894.

No. 115.

ESPRIT DE CORPS, AN AID TO DISCIPLINE.

By Major Sir R. A. Colleton, Royal Welch Fusiliers.

Esprit de Corps has been somewhere defined as the art of abusing every other Regiment than ones own. And this, no doubt, is the form that it sometimes takes and is perhaps the reason that that good old Military virtue has of late years somewhat fallen into disrepute. At any rate it is a virtue that is but little inculcated in these unsentimental days ; and I venture to think we lose thereby a valuable means for the maintenance of discipline.

But there is a spurious and a real Esprit de Corps. The false consists in resting on the past laurels of our Regiment and priding ourselves on being Gunners, or Cavalry, or Guards, or Rifles, or Fusiliers, or Highlanders ; thanking God, like the Pharisee, that we are not as other men are, without taking the trouble to shew in what the superiority we claim consists. Those who possess the real Esprit de Corps, while priding themselves equally on the past achievements and good name of their Corps, endeavour to shew by their conduct in Peace, or War, that they are worthy inheritors of its reputation.

There are some who tell us that it is very snobbish thus to pride oneself on belonging to any particular corps—that officers and men in all regiments are drawn from the same sources and that consequently one Regiment is as good as another—neither better nor worse. But these, I think belong chiefly to that class of mind of which we see so many instances in politics, men who are ardent lovers of all mankind and of every other country but their own. But it will be an evil day for the British Army and the British Nation if such ideas become general and the British soldier is taught to believe that he is no better than the soldier of any other nation. It was in exactly the opposite spirit that

our Fathers accomplished those great deeds, which have made England what she is, and the British Navy and Army glorious for all time. If history be true, our Elisabethan ancestors had a saying "one Spaniard lick two Portuguese, and one jolly Englishman lick all three." This, in the eyes of some, is a deplorably Jingoe and chauvinist saying, which besides being untrue, is extremely discourteous to the friendly nations therein mentioned, and should therefore be consigned to oblivion as a remnant of barbarism. But all the same, that sentence, to use the slang of the day, is "Full of merit"; and worthy to be remembered, not only by soldiers and sailors, but by all who have to struggle to overcome an adversary. For while I am not concerned to maintain the literal truth of the saying, there can be no doubt that the mere fact that a man is firmly convinced of his superiority over his adversary, must, if his faith be firm, go a long way towards making him superior. Let it not be thought that I advocate overweening conceit and despising ones enemy. Quite the contrary. Let us take beforehand all reasonable measures in order that we may deserve Victory and then trust to the spirit of our Elisabethan forefathers to ensure it.

I have hinted at the begining of this lecture at my belief that Esprit de Corps has not now the same force in the army that it had in the past. Its decay is I consider, due to the following reasons.

1st. The change in the nomenclature of the single battalion regiments, which took place when the system of territorial regiments, was introduced; which often resulted in two battalions being linked together which had no previous associations or sympathies in common. Indeed, it is notorious that in several instances these unions were extremely ill assorted and the ill feeling between the linked battalions was very strong. Under such circumstances it was inevitable, as the men changed backwards and forwards from one battalion to the other that the old battalion Esprit de Corps should die out, while the hostile sentiments of the officers prevented the cultivation of any new bond of union to take its place. This cause of decay acted in different regiments with varying degrees of intensity, some corps being more suitably mated than others. The soreness between linked battalions is now dying out and a healthy regimental feeling is beginning to take its place. But the soldier is a conservative animal and Esprit de Corps is a plant of slow growth, which cannot be ruthlessly dug up and transplanted in strange soil with impunity, but when grown, it sends its roots both wide and deep.

2nd. Esprit de Corps cannot I think, be expected to have the spontaneous growth in the short service soldier that it had in

the old 21 years man, who spent the greater part of his active life in the service and whose regiment was his home. The classes from which the British soldier is drawn have an innate prejudice against the army as a profession, which is one of the greatest obstacles to recruiting. A man, as a rule, only enlists either through a love of adventure, because he is unable to earn a livelihood in civil life, or because he has had some trouble with the opposite sex. When he does "go for a soldier," he is generally considered by his friends and relations to have made a step on the downward path in life. The old time recruit enlisted for 21 years and finding himself thrown among comrades similarly situated, and with whom *Esprit de Corps* and discipline had in the course of years become second nature, speedily and insensibly imbibed the opinions and habits of those about him, and learnt to reckon at their true value the prejudices of those who opposed his enlistment. The majority of recruits of the present day join with different ideas and under different circumstances. They have, as a rule, enlisted to avoid some temporary trouble at home and on joining, find themselves among comrades, who are eagerly anticipating their release from the irksome control of Military service, and their return to the freedom of civil life at the end of their first period of limited engagement. In such men the soil is not favorable to the spontaneous growth of *Esprit de Corps*, nor is there sufficient time for discipline to become a habit. In the short service soldier *Esprit de Corps* is an "*Exotic*" which must be carefully planted and tended before we can expect it to flourish.

And now let us consider by reference to times past what is the practical value of *Esprit de Corps*, and if it be worth the trouble necessary to instil it in the mind of the soldier. In order to do this we must turn to military history and more particularly to that much of it, which is contained in the Historical Records of our most famous regiments.

The English knights and archers who fought at Crecy, Poitiers and Agincourt possessed an intense pride of class, which was a species of *Esprit de Corps*. How heartily the English archer despised the bowmen of other nations, who unable to use bows of the weight and strength of the English longbow, tried to compensate for their inferior strength and skill by the use of the cross-bow. What was it, but that just pride and confidence in himself and his fellows which enabled him so fearlessly to encounter and overthrow time after time apparently overwhelming odds.

That the Elisabethan navigators and adventurers possessed this pride of class in a marked degree is shewn by numberless instances, and by the spirit which inspired that arrogant boast

before quoted, "One Spaniard lick two Portugee, one jolly Englishman lick all three."

But Drake, Raleigh, Howard, Frobisher, Sir Richard Greville and others too numerous to mention proved time and again that it was no idle vaunt.

What was it but *Esprit de Corps*, combined with religious fanaticism and strict discipline, which made Cromwell's "Ironsides" the terror of their foes. Some may be inclined to assign the most important share in their success to their religious enthusiasm, but history tells us that their religion sat but lightly on many of them when in private, and was often only assumed as a convenient cloak. But granting that their success was due to the feeling that "God's saints" were irresistible, was this not also a kind of *Esprit de Corps*.

Coming to more recent times let us turn to the battle of Minden, when six regiments of British Infantry—the 12th, 20th, 23rd, 25th, 37th and 51st with a Brigade of Hanoverians, exposed in front and flank to artillery and musketry, charged in line and rolled back wave after wave of the Household cavalry of France.

Remember the conduct of the Fusilier Brigade at Albuera immortalised in Napier's splendid description of that battle. Remember the behaviour of the 57th at the same battle, where fighting to the last, surrounded by numberless foes, they earned the glorious name of the "Diehards." Recall the deeds of the 28th and of the 92nd Highlanders at Quatre Bras; the unshaken firmness of the British squares at Waterloo, the victorious charges of the Heavy Cavalry, when the French Cuirassiers went down before the Union Brigade like grass before the mower. Consider the bravery of the Light Division at Alma, the charges of the Heavy and Light Brigades at Balaclava and the conduct of our hardly pressed and scattered men in the soldier's battle of Inkerman. Think of the hardships endured and herosim displayed by our men in the Indian mutiny. But what need further to multiply instances? Let any one ask himself, after studying the history of the corps and regiments of the British Army, if some force, other than mere animal courage, was not needed to bring men victoriously through the dangers and perils therein related. And what was that force, which animated the British soldier to do such great deeds, but love of country, pride in his regiment, self respect and a determination to do his duty at all costs, even that of life itself; all of which motives are summed up for the soldier in the term *Esprit de Corps*. There can then I think be no doubt as to the practical value of *Esprit de Corps* in war.

But we are not always at war : in fact many, I may say the majority of soldiers, go through their whole service without having had the chance of proving their discipline and courage in the field. What then can *Esprit de Corps* do for us in time of peace ? It can I think do much to aid in the maintenance of that discipline without which the best armed men are a rabble and not soldiers. If it be continually instilled into the mind of the soldier from the time he joins until he leaves the Service that he is the inheritor of the good name and reputation, which his predecessors have earned for the Regiment, and that while it is a privilege and an honor to belong to that regiment, he must constantly bear in mind that its good name and reputation are now in his keeping, and that it is his most sacred duty to hand them down to his successors unblemished and unimpaired. Make him understand that although he may not have the chance of distinguishing himself on Service, cleanliness and smartness in appearance, the steady and cheerful discharge of all duty that may be required of him, whether pleasant, or unpleasant, are certain methods of maintaining the good name of his regiment. Teach him that the man who shirks a disagreeable duty, or performs it sulkily or half-heartedly, who falls out on the line of march, or goes sick, without sufficient cause, is as certainly injuring the reputation of his Regiment as if he were guilty of skulking on the field of battle ; and that he cannot do any action, which is disgraceful to him as a man, without also disgracing the corps of which he is a member. If the soldier can be thoroughly imbued with such ideas as these, it will scarcely be denied that *Esprit de Corps* is capable of being a very powerful aid to discipline.

But I may here be told that there is much virtue in an "if" and that not until the Millenium arrives, will it be possible to substitute the fear of disgrace for the fear of punishment, as a deterrent to offences against discipline, and that when that time does arrive, soldiers and martial virtues will be at a discount. I willingly admit that Perfection, however much we may strive after it, is unattainable, nevertheless it is our duty not to cease trying to attain it. As long as Human nature is what it is, it will never be possible to dispense entirely with punishment for offences against the law, whether Civil, or Military. But punishment is for the minority, and there is in all ranks and conditions of life a Majority, who are restrained from the commission of offences against the law, either by their consciences, or by the force of Public opinion. *Esprit de Corps* appeals in a regiment both to the conscience of the individual and to Public opinion, and the cultivation of that sentiment has for its object the increase of that majority for whom punishment is not required. It will I think be

conceded by all, that that object is a worthy one to strive for, it only remains to consider how far our aim is a practicable one and how we should set about its realisation.

Every regiment in the British Army possesses its Regimental Record, in which is to be found its history from the time it was raised, and a more or less full account of the Battles and Campaigns in which it has taken part and the names of officers and men belonging to the corps, who have in times past specially distinguished themselves by their bravery and conduct. These Records are official and were compiled in the Adjutant General's Office by Mr. Richard Cannon and were issued to the army in 1850. Some regiments, more fortunate than others, have lately had their Records revised, expanded and brought up to date, my own Regiment, the Royal Welch Fusiliers, is one of these, and its history now extends to 1889, in which year was celebrated its Bicentenary. But even those corps, whose histories have not been revised since 1850 possess ample material to enable them to carry out the object with which these records were written. That object is clearly explained in the preface to the First Edition, issued to the army in 1836 as follows :—

“The character and credit of the British Army must chiefly depend upon the zeal and ardour by which all who enter into its service are animated, and consequently it is of the highest importance that any measure calculated to excite the spirit of education, by which alone great and gallant actions are achieved, should be adopted.”

“Nothing can more fully tend to the accomplishment of this desirable object than a full display of the noble deeds with which the military history of our country abounds. To hold forth these bright examples to the imitation of the youthful soldier and thus incite him to emulate the meritorious conduct of those who have preceded him in their honourable career, are among the motives that have given rise to the present publication.”

Now I venture to think that the motives above set forth have been somewhat lost sight of, of late years, in the British Army, and that while devoting much time and attention to such subjects as Musketry, Attack and Defence and all that forms the physical and material side of a soldier's education, we are in danger of neglecting the cultivation of his mind and of those qualities, of which *Esprit de Corps* is the most important, that go to produce a good “morale,” without which the soldier is a soulless machine, a steam engine without steam.

And yet that great commander, Napoleon has told us that, “In war moral effects are to physical ones as three to one.” That he acted uniformly on this axiom is evident from the perusal of

those proclamations with which he was in the habit of inflaming the ardour of his soldiers on the eve of the campaign, or great battle. That he was most sedulous in inculcating *Esprit de Corps* in his regiments is proved by many instances, the one which, most readily occurs to me being that related by Baron de Marbot in his memoirs ; when at the battle of Aspern and Essling, Napoleon was informed that one of his regiments had been driven by the Austrians out of the village of Aspern, its Colonel killed and that it was retiring in confusion. Napoleon at once galloped up to the regiment and called for the Colonel until at last someone ventured to reply to his repeated enquiries that the Colonel was dead. "I asked where is he"? "We left him in the village." "What you left the body of your Colonel in the hands of the enemy ! Go back instantly and find it and learn that a good regiment should always be able to shew its colonel and its Eagle." The regiment at once turned back, retook the village and laid the colonel's body at Napoleon's feet.

But to return to the point from which I fear I have somewhat digressed. My proposal briefly is ; that the history of his Regiment should form part of the instruction of every recruit from the day he joins until he takes his place in the ranks as a drilled soldier. His attention should be especially drawn to those parts of it, in which Non-Commissioned Officers or private soldiers are honorably mentioned and praised for their valor and good conduct ; in order that he may understand that it is not only the conduct of the officers which brings credit or discredit on the name of a corps, but that on the contrary as there are many more soldiers in a corps than there are officers, so the former in proportion to their numbers have a greater influence on the name and reputation of the regiment. Teach him that it does not fall to the lot of every one to do "some great thing," but that he must not on that account, like the Syrian of old, despise and neglect the every day work that lies to his hand in time of peace and that the reputation of the corps, which is in his keeping, is as surely maintained by the strict unostentatious performance of duty in time of peace, as by the performance of some conspicuous deed of gallantry in war. There should be a copy of the Regimental Records on the table of every Reading room in the regiment and it should be the text book from which reading and dictation are taught in the regimental schools.

That the soldier of the present day is by no means insensible to the name gained by his Regiment in the past is proved by the fact that on any occasion when the barrack rooms are decorated, such as Xmas day, the victories won by the Regiment, in-

variably take their part in the adornment of the walls. But I fear that very few of the men could tell in what country the place, which gives its name to the battle, is situated, against what enemy it was fought and what was the part taken by his Regiment in gaining it. And yet without this knowledge, how can we expect the soldier to respond to a reference, in time of danger, to the past glories of his Regiment. Of what use is it for an officer, in a tight place, to call on his men to "Remember Albuera" or "Alma" if the men are ignorant of all the circumstances connected with those battles. And yet the value of such stirring appeals in time of need has been recognised in all ages. How often did Napoleon bid his soldiers recall Marengo, Austerlitz, Jena, Eylau and Friedland and when did they fail to respond to such an appeal. But then most of the veterans to whom those appeals were made, had either themselves taken part in those battles, or had become intimately acquainted with all the details connected with them. Is not a French mob lashed into frenzy by a reference to some date, which to the uninitiated means nothing, but which the people addressed know to be the date of some Republican or Revolutionary anniversary. Note the effect produced on an Orangeman by the mention of the Battle of the Boyne, or on a modern Irish patriot when he is bidden to "Remember Mitchelstown." But in each of these instances, the effect produced on the hearer is proportional to his knowledge of the events to which allusion is made and the value he sets on the associations connected with them. It is for this reason that I hold it absolutely necessary that the soldier should be instructed in the history of the Regiment to which he belongs. In addition to such instruction the officers when reproving an offender should endeavour to touch the man's pride, and appeal to his feelings of self respect and *Esprit de Corps*. Those who have never tried the effect of such an appeal may perhaps smile and put me down as an unpractical theorist for making such a suggestion. But I can only say that I have tried it and often found it more effectual than punishment. It is more particularly in those offences against military discipline, which are the most difficult to reach by the stereotyped methods, that this course of treatment will be found most effectual. Such offences as "Slackness on Guard," "eye service on Fatigue," "falling out on the line of march" and "going sick without sufficient cause," are of all offences the most difficult of proof and at the same time the most destructive to discipline, because they are so insidious and far reaching in their effects. It may be said that the regulations provide for the two latter offences by directing the medical officer to mark any man for "Duty" who 'falls out' or reports himself sick

without cause, and that every such man is to be punished. But if a man tells the Doctor that he was obliged to fall out by a sudden colic, or that he has had bad fever during the night but is better now; how can the doctor contradict him on the spur of the moment? All he can do in case of doubt is to detain the man for observation, and there is no proof obtainable that he is malingering to shirk a distasteful duty, and so the offender escapes detection. Such a man may be known to his officers as a sneaking fellow and a real "Queen's Hard Bargain" and yet he may have a clean defaulters sheet, because the law cannot reach him. A few such men are a veritable plague spot in a Regiment and will by their bad example do untold mischief, if their influence is not promptly checked. The only means of doing this is to create a healthy public spirit and to make the men understand how unsoldierlike and unmanly such conduct is and how detrimental to the Reputation of the Regiment. Try and cultivate the feeling which existed in the Old Highland Regiments, when they were first raised and nearly every man in the regiment belonged to the same clan and district, which made the posting of the name of the man guilty of a disgraceful offence on the door of his parish church, the most dreaded punishment that could be inflicted.

The method which I advocate of appealing to the good feeling and honour of the soldier is in use in the German Army and is I believe regarded by them as the Keystone of their system of discipline. In the French Army this description of moral training is considered of the highest importance. The French "instruction Ministerielle" of 30th May 1883 lays down that it is incumbent on officers to educate their men and to give them such instruction in military duty as will raise their moral standard, and at the same time give them a clear notion of their professional obligations. Again a circular of the Minister of War of 1887 prescribes that officers must exert themselves to develop in their men the fundamental principles of discipline, love of duty and obedience to orders, and suggests that the idea of patriotism, sacrifice for, and devotion to ones country, may be evoked by the recital of instances taken from the annals of the army. With this end in view Captain J. Maurie and A. Basille have compiled "*Le Livre du Bon Soldat*" which contains some 200 well authenticated anecdotes, which the Reviewer of the Royal United Service Institution Journal considers to be admirably calculated to excite the interest of the soldier and to impress on him the principles above referred to. No one will I think care to assert that the British, is less sensitive to appeals to his honor and patriotism than the German, or French soldier, and if the Germans and French find it possible to inculcate such feelings in men who serve barely three years with the

colors, it ought to be still more possible for us with men whose term of service with the colors is more than double that of the soldiers of continental armies.

In time of War there are other chords which we can touch with a view to raising the Soldier's morale. It appears to be the custom of late years to leave the Colors of a Battalion at the *Dépôt* before going on Service or sometimes they accompany the Regiment and are left at the Base, or if taken into the Field at all, they are kept in the rear under escort, apparently because in the existing era of breech loading rifles and loose order fighting they would be in great danger of being lost; greatly to the dishonor of the Regiment. But this idea seems to me to be on a par with that which formerly prevented the Artillery from bringing their guns into action at close quarters, for fear of incurring the disgrace of having them captured. But that idea is now happily exploded and the loss of guns which have stuck to their work to the last in support of the other arms is now considered in no way disgraceful; but the dishonor would rather lie in saving them at the expense of the loss of their support at a critical moment. If the Colors are too valuable to risk, why retain them at all, for their value in the eyes of the soldier lies in the fact they, (for the colors, like the king, never die) have waved and guided the Regiment to victory in every battle inscribed on their folds. And who can question the value of the Colors to the worn out soldier, in the moment of depression, when he feels he can do no more, and Victory, or Defeat, hang in the balance. If any doubt, let him read Kinglake's account of the Alma, when the Queen's Color of The Royal Welch, in the hands of young Austruther, led the light division to the assault of the Great Redoubt. And how many instances of a like nature could not be quoted by other officers versed in the Records of their regiments? No, so far from keeping the Colors out of danger let them be seen always in the thickest of the fight and let the soldier be taught that so long as a man remains alive it is his duty to defend them to the last. To lose colors in this way is no disgrace and the lives of those who fall in carrying them will be well expended.

The Band of a regiment is often treated in much the same way as the colors, or if brought into the field, the men are used as stretcher bearers. Martial music is an incentive to a soldier's spirit, which should by no means be neglected, and one that was made use of by Skobelev when his regiments marched, with all their Bands playing, to the attack of the Green Hills at Plevna.

In fact if we wish for success in war we should neglect no means of raising the morale of our men. It is useless to appeal in the day of battle to the *Esprit de Corps* of our men and past

glories of our Regiments, if we have neglected to prepare the soil and sow the seed in time of peace.

Above all things combat that damnable doctrine that steam and the Breechloader have reduced all men to the same level and that the British soldier and sailor, being no better armed than their enemies, are no better than the soldier or sailor of any other nation, and that one man is as good as another. All history teaches us the contrary and that it is not the weapons, but the superior skill and nerve of the men who use them, and the ability to stand "hard pounding" the longest that makes the difference between victory and defeat.

Although in the foregoing remarks I have spoken only of the British soldier, no one who knows the pride of race which animates the Sikh, Gurkha, Rajput, Pathan and other warrior castes of which our native army is composed, will doubt that the systematic moral training and cultivation of *Esprit de Corps* which I have been advocating, is as applicable to the native soldier as to his European comrade. The most casual study of the army list and of the history of India for the last 150 years will suffice to shew that there is no lack of examples which can be held up for emulation to the native soldier of the present day; while the behaviour of the Madras sepoy at Arcot under Clive, the conduct of the Bombay Grenadiers at Karegaum, the march of the Guides to Delhi during the mutiny, are achievements of which any army might be proud.

Some time ago when reading "the Saturday" I was very much struck by the review of a book by a Frenchman, M. Hector France, who criticises the British Army and its achievements in no friendly spirit. He vigorously denies that the British Soldier is better than the soldier of any other country, "La Belle France" for instance, but he attributes the many victories of the Britisher entirely to his insufferable conceit, which when he had been handsomely beaten, prevented his believing in the possibility of his defeat, and retiring from the Field as he ought to have done if he played the game fairly. But says M. France, "what can you do with men who are so infatuated with conceit that every private soldier says to himself." The British Army is the finest in the world, my Regiment is the finest in the British Army, and I am the finest soldier in my regiment." Clearly all argument mental or physical, is thrown away on such people. There, we see ourselves as others see us, but I fear the picture is too flattering. I venture to think there is a most valuable lesson to be learnt from M. France's criticisms on us; although not the one perhaps he intended to convey. The words put in the mouth of the British soldier by M. France express precisely the spirit in which I should

like to see him take the field. If we can induce the soldier to have this high opinion of himself and to justify it by endeavouring to live up to this ideal in time of peace, we shall have succeeded in creating an Esprit de Corps of the highest order, which will sparkle with no evanescent crackling blaze, but which will burn with a steady glow like the fire on the hearth of the blacksmith's forge, which one blast of the bellows converts into a fierce consuming flame.

COSSACK SWARMS.

By Lieut. Colonel P. Neville. 14th Bengal Lancers.

Cavalry which has been trained to manœuvre exclusively in close order against other troops in similar formation, will undoubtedly find itself much embarrassed when confronted for the first time with a swarm attack.

This form of offence is more or less extensively practised by foreign armies, especially that of Russia.

The Cossacks particularly of this Nation affect what they call the "*Lava*" formation in preference to a close order, and, as it is not at all improbable that one day we shall be called upon to meet these troops in the field, it will not be out of place to consider this form of attack and the way in which it may best be met and confounded.

Owing to the close supervision of the Press in Russia and the stringent regulations in force for suppressing the disclosure of any of their military methods to foreign Powers, it is impossible for us to obtain any reliable information regarding their Cavalry drill and tactics.

However, I have found in the writings of Professor Vambéry much valuable information concerning the Cossacks and their tactics.

Before, however touching upon this point I would first discuss the subject of swarms generally, and especially a pamphlet published some years ago (1887), by Lieutenant Colonel G. C. Hogg, then Commanding The Poona Horse, entitled "Cavalry Swarms." Colonel Hogg is an advocate for the "Swarms" as opposed to the close-order attacks. His method is to extend at a distance and advance in extended order. When close to the enemy, the troops rapidly close to the centre, or a flank of Squadrons or troops, as directed by signal, and fall on the enemy in small units and in partially closed order. His arguments in favor in his views may be briefly condensed as follows:—

1. Immunity from the effects of fire.
2. Facilities for a flank attack.
3. Facilities for manœuvring.
4. Advantage when attacked by superior numbers.
5. Rapidity of movement.
6. Advantages of small tactical units.

7. Effect in giving security to the flanks.

8. Advantages in forcing a combat on an unwilling enemy.

He then considers the objections that may be advanced to the above, which he conceives to be—

- (a). Want of control.
- (b). Want of cohesion in the attack.
- (c). Dust and smoke.
- (d). Multiplicity of commands.
- (e). Over fatigue of horses.
- (f). Reducing the chances of surprise.
- (g). Loosening of moral ties.

Beginning with his No. 1, I will give a précis of his arguments, and afterwards proceed to give a rough idea, according to Vambéry, of the Cossack methods, with suggestions as to the best way of defeating them.

1. "It is obvious," says Colonel Hogg, "that cavalry advancing under fire in close order offer, not only a conspicuous, but a very compact target for Artillery as well as Infantry, and it is equally obvious that when extended as recommended, not only is the effect of a direct fire reduced 5 to 2, but what is of equal importance, the chances of a concentrated fire from both flanks are in consequence of the extended front very much diminished. These are very important advantages, and as they are not likely to be disputed, I shall have nothing further to say on the subject."

Notwithstanding the writer's opinion, I will venture to dispute his argument. It must be borne in mind that the error in all fire, whether of Infantry or Artillery, is to be found in the vertical rather than the horizontal plane; and therefore, except in confusing the firing body as to the objective of aim, it matters comparatively little whether an open or close order obtain.

Again, no sane Cavalry commander, except when prepared to immolate his command on the altar of Duty, would think of charging infantry when exposed to a converging fire from both flanks, and when attacking his own Arm, such a fire is under present conditions impossible.

I do not say it will be impossible when quick firing guns are added to the armament of the Cavalry Division, but that is another question.

2. His next point is "Facilities for a flank attack," and the argument is even weaker than the above. "In order," he says, "to get on to the flank, the first thing to be done is to make a movement towards the flank to be attacked, and the more compact the order is, in which the line is formed, the further must the body which is to make the flank attack have to travel before it can complete an out-flanking movement. It stands to reason

therefore, that if the Cavalry are in extended order to start with, they will have a much shorter distance to travel to reach a flank than if they were in compact order."

I must again differ with the writer. If his extended cavalry mean to attack their enemy's flank by single troopers, then no doubt, the man nearest the objective will have but a comparatively short way to travel, but if, as is contemplated by Colonel Hogg, he has to wait until all the men of his Squadron or Troop have arrived in their places in close order before delivering the attack, I quite fail to see what advantage has been gained by the extended swarm.

3. Regarding "Facilities for manœuvring," he says "It does not require any great training as a Cavalry Officer to appreciate the fact that an individual on horseback riding by himself must necessarily be able to move much faster than a man squeezed in between several other men on each side of him."

This opening sentence of Colonel Hogg's contains the whole argument of his page and a half on this point. Speed, however, and not manœuvring would seem to be the writer's *desideratum*, and except when attacking infantry or guns, speed is a quantity that should ever be subordinate to good order and cohesion. The Great Napoleon on this point observes—"In the combat of Cavalry against Cavalry, it is not rapidity of movement which gives the best result, but good order and cohesion."

4. The next point is the advantage of the Swarm when attacked by superior numbers. Here, though he quite fails to prove any such advantage, (for it is a recognized fact that Cavalry in loose order cannot successfully attack an enemy in a close formation, especially if in greater strength) the writer has hit on the actual sting of swarm attack. *They can annoy the enemy :—they can unsteady them ;—and it is difficult to sweep them away.*

"Under such circumstances, it would be difficult for Cavalry in close formation, even if they commenced manœuvring with a view of gaining some advantage of position, to score much by it, if opposed to an enemy as well drilled as themselves. The compactness of their formation would prevent any great speed if they did commence manœuvring, and a retirement could not long be postponed unless under some exceptionally favorable circumstances. In loose order the wide extent of front would afford great facilities for falling on a flank, and the Swarms with plenty of room for themselves and their horses, could open out in front of the attacking body, and swarm round the flanks and rear. *

* * Even if no such advantage were gained, it would be very difficult for the enemy to force them to retire. They would

separate into irregular groups under their respective leaders, always ready to threaten some flank or the rear, and their extended formation would render it very difficult to drive them in."

Here, as before remarked, is the whole danger of swarms. They can annoy: they can open out and crowd on the flanks and rear of formed bodies, but there the value of any such formation ends. To attempt to manœuvre with such a rabble is hopeless, and, unless the men are individually enterprising and bold, they are little to be feared, unless, as will be considered further on, they have recourse to fire action.

5. In the next paragraph the writer tries to prove that the rapidity of movement which is a quality of swarms, gives them an advantage over troops in close order.

I believe however that this is entirely delusive. Their rapidity of movement may enhance their powers of annoyance, but as we have seen, cavalry in loose order and without cohesion are powerless to break formed bodies. They *must* close if they mean to charge, and in this act of closing they will be at the mercy of a body in good order which may take that initiative and charge them first.

6. His next point is "The advantage of small tactical units." This is a question which has often been brought to the fore in tactical discussions, and there is a good deal to be said for it when it takes the form of an attack in echelon, each step closely following its predecessor in mutual support. The Squadron is in reality (whatever arguments may be advanced to the contrary) the tactical unit of Cavalry, because it is as great a body of troops as one man can control in the confusion of a *mêlée*. In Colonel Hogg's illustrations to his pamphlet, flank attacks are made by Troops and in most of his instances, the squadrons when formed for attack, are too far apart to afford the mutual support which is an essential point in the echelon attack.

7. Regarding the security of a swarm against flank attack, he says.

"The weakness of the flanks in bodies of Cavalry is so well known, that it is superfluous to discuss it, and the larger the body of Cavalry, the greater is the weakness. The German Cavalry reformer Schmidt (*sic*) goes so far as to say that ten men on the flank produce a greater effect than 100 men in front. * * *

* * * A Regiment manœuvring under existing regulations, shows the flanks of all its squadrons from afar off, and in manœuvring against them an opponent can from the very commencement plan his tactical dispositions so as to arrange to try and fall on one or more of them, but in the case of swarms there are practically no flanks at all until it is too late to manœuvre against them."

This is in reality begging the question. Swarms, as we shall presently see, are exceedingly vulnerable in flank and also extremely liable to a sudden panic, when they become entirely un-manageable. Because, under Col. Hogg's system, the tactical units do not close until the moment of attack it does not at all follow that his extended line "has no flanks."

8. In conclusion of his arguments in favor of his scheme, the writer says—

"With two regiments in knee-to knee formation, if either of them declines the combat by retiring it is not an easy matter to force on an engagement; for the extreme rapidity required in any advance made to overtake a retiring enemy would certainly cause great disorder. In the case of Swarms however, the extended intervals would offer such facilities for moving at a rapid pace that opportunities might occasionally occur where Swarms could attack in rear the retiring body."

The best reply to this is given in his own next sentence.—"I do not for a moment suggest that such tactics are advisable."

Combatting the objections to his scheme which he deems most likely to be raised, he says—

(a) "One of the most serious objections which will at once present itself in connection with a system of Swarms, is that in the extended formation, the men are not under proper control, and that if wanted at a critical moment to attack in compact order, it would be found impossible in the din of battle to get the men together."

This is very true, and the writer's answer scarcely meets the difficulty.

"To meet it"—he says—"all that is necessary is to introduce certain modifications in our Drill Book. * * * With the loose order habitually practiced during time of peace, we should be able with safety to carry it out practically during war." This extremely optimistic view of Col. Hogg's cannot be entertained by the most sanguine tactician without the *data* of troops who shall be the very perfection of coolness, courage, and intelligence; and, given such perfect men, it would seem a pity to handicap them in the manner suggested, when in close order they might conquer the World.

(b) The next point of objection is the want of cohesion in the attack. This he defends by a curious kind of anti-antistasis. "It is bad enough as it is,"—he argues—"for do we not see opening out under our present close-order regulations? Therefore it may just as well be a little worse."

"It is, as it were, on the part of the Regiment a natural and irresistible striving after that formation which is the most suit-

able for the advance of several hundred horses in line at a rapid pace."

This rapidity of pace seems to be the writer's stumbling-block. His pamphlet only deals with Cavalry, *versus* Cavalry, and not with attacks on the other Arms, and the highest authorities are at one on the point that cohesion and good order are more desirable than speed in such attacks.

The Great Lasalle made a practice of attacking cavalry at a trot, in order to secure this very advantage, and only increased his speed when the moment for charging had arrived.

(c) The drawbacks of dust and smoke the writer holds to be equal evils with open or close formations.

(d) Regarding the multiplicity of commands incidental on an extended formation, he holds that this is an advantage occasionally as bringing out the aptitude for independent action of the junior officers. (!)

(e) The question of over-fatigue of horses he meets by saying that when open order manoeuvring is reduced to a science, there will be little or no extra fatigue. (!!)

(f) As to the extended line reducing the chances of a surprise, he says—

"The conditions necessary for a surprise must be borne in mind. The essential conditions are favourable ground, or dust and smoke. I have already alluded to the latter. * * * As regards ground favorable for the concealment of Cavalry, if such ground is available there is no necessity for extending !!

(g.) With reference to the loosening of moral ties, he argues that this will not affect the brave, and for the cowards, they have under the present system just as good a chance of evading personal danger. With this however, I fancy few of his readers will agree.

Taking it as a whole, after reading Colonel Hogg's paper I came to the conclusion that he had entirely failed to establish his argument for the employment of Cavalry Swarms.

If indeed, he had planned to *attack* in an open formation with his leading lines which should aim at the enemy's flanks and rear, and then charge home with closed squadrons coming up behind them, there might be something to be said for the scheme, but as Colonel Hogg closes each of his units before attacking to about a foot interval, his previous extension seems quite devoid of reason.

The whole question of Cavalry swarms seems to me simple enough. It means one of these things :—Either want of skill in manoeuvring in close order, horses so small and light as to be unsuited for shock action, or cowardice of the troops who cannot

be induced to attack boldly, knee to knee, but prefer a formation in which each individual, if so disposed, may evade the personal danger incidental on a frontal attack by a pretence of being busy on the flanks or rear of the enemy.

Given a brave, but unskilful enemy, a Swarm of determined and intrepid horsemen will be difficult to meet in close order because they will open to let the closed bodies pass through, and then fall on their flanks and rear. Such swarms must be met in a similar formation, and the fight will then assume the mediæval form of a series of hand-to-hand combats, in which numbers, horseman-ship and skill in the use of arms will give the advantage to one side or the other.

An enemy of the third class is little to be feared. They will be out of control of their leaders, intent rather on saving their own skins than on inflicting injury on their opponents, and very liable to a sudden panic, but—and this is the point to be considered—they can cause annoyance and unsteadiness in the ranks of their adversaries especially if they have recourse to rifle fire, and may render the closed bodies liable to defeat by the enemy's regular troops coming up behind them in good order and in several lines.

This is the real danger of swarms.

Now let a case be considered in the abstract of two bodies of equal strength—the one in close formation, and the other in a loose swarm, attacking one another, and let it be supposed that the irregular troops belong to one of the 2nd or 3rd class before mentioned.

(Pl. 1 Fig. I.) Here it is very evident that if the swarm D. A. B. E. were to await the attack of the line C, the portion A. B. would be swept away and practically annihilated. There would then remain the two wings D. and E. which should wheel round and attack the flanks and rear of C. They being now only about half the strength of C.) Owing to the pace at which the line will be moving just before contact, D. and E. will be left behind and only a few men will be able to gain the flanks of C., D. and E. must therefore wheel round and attack from the rear. If the line maintain good order and cohesion, they will have nothing to do, after the defeat of A. B. but wheel troops about to confront D. and E. in closer (and therefore better) formation, and in the proportion of two to one; result—victory for C.

The swarm however, will certainly *not* await the charge of the line but will open out, as in Pl. 1. Fig. 2, and endeavour to crowd round the flanks and rear. The best formation therefore for C is a double echelon (Pl. 1. Fig. 3.)

Now the weak point of all swarms is undoubtedly the flank. If closed lines are vulnerable in this direction, swarms are doubly so. A flank attack on brave and steady troops in close order will

doubtless cause a certain amount of confusion and the breaking up of the flank attacked into small echelons—as Troops or Groups—but it should cause no panic, and should as a rule, unless defeated in overwhelming force, be powerless to stop the onward momentum of the charge of the main body. Very different however, is it with irregular swarms in which every man acts for himself and there is no cohesion and very little control by the Officers.

On these a flank attack, especially if it comes as a surprise, will have a very demoralizing effect. Unable, as in the case of a frontal assault, to open and make way for the assailants, they will be thrown one upon another, making their disorder more disorderly, and inducing a panic which in most cases should lead to a general stampede of the Swarm.

Let C therefore detach squadrons Nos. 1 and 8 to threaten the flanks of D and E. (Pl. 1 Fig 4) These squadrons being, as is obvious from their position, safe from Artillery fire, can manoeuvre in single rank so that practically they form double squadrons as in Pl. 2 Fig. 1.

The swarms will then assume the form shewn in Pl. 2 Fig. 2 and their power of offence against the flanks and rear of C will be manifestly much weakened.

Should A, D, and B, E press on the flanks of C, they will be charged in flank and rounded up by 1 and 8 C—should they try to surround these squadrons, they will be taken in flank and defeated by squadrons 2 and 7. (Pl. 2 Fig 3)

So far we have only discussed admissible action when opposed to Swarms of the 2nd and 3rd class; i. e.—those too lightly mounted for shock action and cowardly hordes who have no wish to close. Should the irregular troops however, be of the 1st class—brave and intrepid horse-men, (as were the Mamelouks, and are many of the Arabian Tribes) but unskilled in maintaining close order, then it will be necessary to meet them with their own tactics, extending a quarter or less proportion of each squadron as ordered according to their numbers, but always retaining hand at least one closed unit—as a Troop, ready to charge the numbers of the enemy which the fortunes of the fight may cause to aggregate, and which shall be the *point d'appui* for the external men to rally on when called upon to do so.

As we are not likely to meet any irregulars of this class, I shall not enlarge on the foregoing few remarks.

In the course of the action, as indicated above, the elements being engaged, it is to be noted that the reasons governing the 2nd and 3rd classes of warriors, superior in strength to anything except the main wall with which they charge, *peu importe* consist a certain number of the enemy, who will thus diminish in number

while they themselves, retaining their superiority of formation, weight, and *morale*, should have comparatively few casualties.

To revert to the Cossacks and their methods, which is, after all, the question that really concerns us.

Vaubéry, in his writings on Central Asia, describes the Cossacks as a cowardly race, having but little stomach for fighting, unless when in overwhelming numbers. They are mounted he says, on small and weedy ponies which could never stand the shock of a charge by British or Native Indian Cavalry. Both men and ponies, however, are hardy and inured to fatigue; they can cover great distances in the day and live on an incredibly small amount of food.

The men are armed with long-range rifles, (in the use of which they are expert) swords, and very long lances. Their "lava" attack is not (unless, as before said, they are greatly superior in strength) a hand-to-hand engagement.

They gallop up in an irregular line, or swarm, as near as they dare to the enemy and, throwing themselves from their 'tats', fire with their rifles.

On the first sign of pursuit, they re-mount and fly at full speed, only to return again directly pursuit ceases, to resume their fire tactics.

Now whether Vaubéry is correct or not matters little. Suppose that instead of cowardly, the Cossacks were brave, yet if as he says (and this we may believe) they are mounted on small ponies, it is clear that they are troops unsuited for a shock form of attack, and it is therefore very probable that the tactics above described are those which they will adopt in the field.

All swarms have three courses open. Either they may attack with the *arme blanche*, use their fire arms mounted, or act as dismounted infantry. The first of these is easily dealt with: as for the second, no mounted fire is of great effect, but the third form of attack is both dangerous and difficult to deal with, so, as it is well to be prepared for the worst, it is this which shall be discussed.

It may be assumed to begin with, that their force will be superior to ours, and that we shall rather under than over estimate it at as 3 to 2.

Also from what we know of the Russian Forces in Central Asia, we may assume that half of their cavalry will be Cossacks.

Of these however, it may be that several regiments may be better mounted and trained than the rest and capable of taking part with the Regular troops in shock action.

We may also fairly assume that they will have two Horse Artillery Batteries to our one.

The first point then is, as we have seen, to aim at their flanks, or rather flank, for as a rule but one will be exposed, and this will be the easier for us as they will endeavour to get round our flanks and rear.

That the swarm can only attack on one flank is evident, if the enemy's artillery is to have a free field of action.

If they attack in front and on both flanks, their guns must be masked.

It is therefore on the *outward flank from the guns* that we must expect them.

This is point No. 2.

It may however happen that several Sotnias may be sent round the enemy's inner flank to harass our guns: (Pl. 3) in such a case a sufficient number of squadrons must be sent from the nearest regiment to support the guns; these should adopt the tactics sketched further on for the outer flank guard.

The third point which I would advance is the well known demoralizing effect which the fire of machine guns or *Mitrailleuses* has on troops of deficient *morale*.

They simply cannot stand before it. It behoves us therefore to complete the armament of our Cavalry Division by the addition of a Battery of such guns which should obviously manœuvre on the flank opposite that of the horse Artillery. The Battery should be composed of six machine guns on light but strong carriages, well horsed, and capable of keeping up with Cavalry at a gallop.*

Let us suppose, for the sake of argument that this has been done, and that we have our Battery of *Mitrailleuses*;—how are we to act when opposed to the Cossack Swarm?

In the first place our Divisional Commander must find out which of his flanks is about to be threatened.

To do this he must either play a waiting game and allow the enemy's Artillery to come into action before making his disposition for attack, or else he must force the enemy's hand and induce them to attack our most protected (by the ground) flank by pushing his artillery rapidly forward and opening fire first, at the same time making a movement with his cavalry towards the flank away from the guns.

* It seems to me a National disgrace that England should be behind the whole world in the strength of her Artillery armament. That we are few in numbers, owing to our (deplorable) volunteer system of enlistment is painfully true, and to counteract this we *ought* to have the most perfect and best trained Army on Earth, but alas! this is very far from being the case. Take this very question of Artillery this is not a matter of men but of money, and we are indubitably the richest of all Nations. Why then have we not the strongest Artillery force in existence. Why should Russia or Prussia, or Belgium, or Sweden be able to bring into the field 2, 5, or 10 Batteries to one of ours? Why indeed?

If the enemy is greatly superior in numbers, it is next necessary to assume a formation best suited to prevent our flanks from being envelopped, and this is evidently a double echelon.

If we start in this formation, it is always easy during the advance to alter the disposition of squadrons, wings, or regiments, as may seem most advisable to the G. O. C.

The next, and most important point, is to secure our threatened flank and keep the enemy's swarms at such a distance that the effect of their small-arm fire may be reduced to a minimum.

This, I believe, will best be effected by means of a strong flank guard of independent squadrons in intimate mutual support, in combination with the Machine gun Battery.

The effective range of swarms using fire arms against moving bodies of cavalry may be estimated at from 600 to 800 yards. We should therefore endeavour to keep them at least half a mile from our outward flank.

This will be a difficult and dangerous task for which the *élite* of the troops should be selected. The independent squadrons should manœuvre in single rank, as every available lance or sabre will be required. In this formation they should be amply able to sweep away any nucleus of their worse mounted foes; their rapidity of movement (working thus independently) will be a palliative against fire, as a further protection against which they may well be covered by extended files, who when threatened at any point by overwhelming numbers, should rapidly retire, thus leaving the nucleus of the enemy a target for the machine guns and an objective for the squadron lines to charge. The extended files above referred to, will be most useful in attracting the attention of the swarms opposed to them and thereby facilitating a surprise on their flanks.

They should even adopt the Cossack method, dismounting and firing by alternate numbers, the better to effect their purpose. We have seen how disastrous a flank attack is on swarms; every possible effort therefore should be made to distract their attention from the flank and thus allow of its being circumvented.

It may be argued that it would be better to meet swarm with swarm, and that our troops being superior to the Cossacks in weight and *morale*, should be able in this loose formation to sweep them away. We must bear in mind however, first that a close formation is superior to any loose order for shock action; secondly, that the enemy being in greatly superior numbers, any open order would render individual troopers of our side liable to be surrounded by their opponents, and thirdly, that in such order the men are out of control, and it is therefore impossible for the superior officers to direct the course of the fight. Moreover, as I have shewn in

a former paper, concentration is the great *desideratum* when contending with an enemy of superior numerical strength.

The question as to the positions, relative to that of the Cavalry Division, to be taken up by the Machine guns and the independent squadrons of the flank guard, must next be thought of. That these will depend on the circumstances of each individual case is certain, but we may assume a normal formation for troops moving in an open country which will suit most cases in point.

That the machine guns when in action will be caught up and passed by the advancing Cavalry is evident; also that whilst limbered up and in movement, they are useless, and that if left behind and not adequately supported, they are liable to be cut off and captured by the enemy.

It therefore follows that they should be divided into separate detachments, the best arrangement being, as it seems to me, three detachments of 2 guns each. The first should gallop out well ahead on the threatened flank, supported by a Squadron, and come into action as far as possible in front of the advancing division.

The second should follow, dividing the distance between the above detachment and the 1st line of Cavalry. The third should remain with the Reserve to repel any attempt of the swarms to gain the rear of the Force. Nos. 1 and 2 should open fire simultaneously. On No. 2 being caught up by the 1st line, No. 3 should gallop to the front and become No. 1. No. 2, when 200 or 300 yards in rear (according to circumstances) should limber up and join the Reserve, and so on, the rear-ward detachment taking the lead in succession.

The supporting squadron should remain attached to the leading detachment.

The independent squadrons of the flank guard must move in such a manner as to render the greatest assistance in keeping the swarms at a distance. As the enemy's exposed flank will be their most vulnerable point, this should be continually threatened. It behoves therefore, a greater portion of the Guard to move somewhat in rear of, and some 700 yards away from the flank of the Cavalry Division. The O. C. the Reserve should keep a very keen look-out to this flank, and if any of the squadrons seems in need of assistance, must promptly send them aid.

As we have seen before, swarms numbering nearly half the enemy's force may be looked for: we should therefore not be niggardly in sending help from the Reserve.

If our Flank Guard is successful in driving off the swarms, and more especially if they cause a panic among them, (a common occurrence with even well disciplined and organised troops, but far more common to swarms) they will be most useful during

the attack of the Division on the enemy's Regular troops, by falling on their flank and rear.

The proposal to arm our Cavalry Divisions with a Battery of Machine guns, or *Mitrailleuses*, is one that has often been mooted of late, though not, I believe, in connection with swarms.

It is a measure that I feel sure would greatly increase the efficiency and offensive power of our Cavalry Arm. The cost would be trifling compared with the resultant good.

In addition to the Divisional Battery of *Mitrailleuses*, it would be a great safe-guard to our Horse Artillery to attach two such machine guns to each Battery. Their fire would be far more efficacious to repel flank attacks by cavalry than the conventional squadron escort. If each Division has two Horse Batteries (and I believe I have the sense of the great majority of Military Officers in saying they should never have less they need fear no front attack, and squadrons detached for the defence of guns, weaken the offensive force of the Division without being of much use to the guns.

The question of ammunition supply is one to be carefully thought out. If this is insufficient, the machine guns become merely an incumbrance to the Division, being of no offensive use, and requiring an escort for their protection. Light but strong *Caissons* of sufficient capacity might be devised which should move in rear of the Reserve.

From these each detachment, on becoming No. 3, as described above, might replenish their limber boxes.

It is superfluous to remark that, as in the case of modern Infantry, a judicious "control of fire" should apply to machine guns.

In every Cavalry Regiment a certain number of men should be instructed in the drill and working of these guns so as to be ready to replace casualties among the gunners.

Seeing that what we have to fear in a campaign against a great Power, such as Russia, is the sheer force of overwhelming numbers, and nothing else, the urgent necessity for machine guns as an additional armament for the Division, cannot, I think be too strongly insisted upon. Nothing short of this will give us the power to combat a very superior cavalry force, while at the same time harrassed and annoyed in flanks and rear by clouds of mounted infantry who have a reputation as marksmen.

It may happen that the Cossacks will precede their Cavalry Division by a day's or even two days' march, un-accompanied by Horse Artillery.

In this case their attacks may be expected in front and on both flanks.

A front attack is not much to be feared unless in broken ground unsuited for cavalry action, as, if our first line take up a broad front, it only needs a rapid forward movement to sweep them away before they have time to clear the flanks.

The danger and annoyance to both flanks, and to the rear of our Division will, however, be proportionately increased.

In this case, both flanks must be guarded by independent squadrons, and the Horse Artillery and Machine guns should be equally divided on both flanks.

As in the former case, a double echelon appears to be a favorable formation for approach.

Marching under such adverse conditions will be slow and harassing work, and the flank Guard squadrons should be frequently relieved as the strain on them will be, doubtless, great.

Wherever favorable ground is met with, squadrons and regiments should be dismounted and the swarms dispersed by rifle fire.

As it is most necessary to practise in peace such manoeuvres as may be required in war, it would be well in our next Cavalry Camp of Exercise to make one side essay the Cossack Swarm tactics and the other the counter attack, either on the lines above suggested, or in some other more suitable way.

Notes for the Illustrations.

Plates 1, and 2, require no explanation except that Fig. 3, of the latter illustrates two courses of action on the part of the swarms.

On the flank A D, they are pressing forward against C and are attacked in flank by squadron No. 8. On the other side they are shewn trying to surround the flank guard squadron No. 1. which lays them open to a rolling-up charge from squadron No. 2.

In Plate 3, the Division is seen advancing to attack the enemy in a double echelon. The enemy has 9 regiments to our 6, the regular troops disposed with 3 regiments in first line, one, in support, and one in Reserve. The remaining 4 regiments are in Swarms, 3 being on our left flank, and one on the right attacking the Horse Artillery.*

The Machine guns are in 3 detachments on the left. Nos. 1 and 2 are supported by a squadron in single ranks which has thrown out a skirmishing line to draw the attention of the swarms from their right flank which is being attacked by 2 squadrons. Half a regiment of the enemy's Irregulars has got behind the Division and is being kept in check by the fire of No. 3 detach-

* The regiments in both sides are assumed to be 500 strong. The swarms at 2 yards interval occupy a front per regiment, of 1000 yards.

ment of Machine guns whilst attacked in flank by one of the independent squadrons of the flank guard. Except the leading regiment, the Division is in an echelon of wings.

The Reserve, it will be noticed, is not in the conventional position, but in rear of the left wing, where it is most wanted.

Plate 4 shows another, though very similar disposition of the Division.

Here 4 machine guns are massed well ahead, so that, having driven off the swarms opposed to them, they can turn their fire on the enemy's Regular troops approaching. As a protection to the Horse Artillery, two *Mitrailleuses* are shewn, supported by the H. A. Escort. This sets free the right wing of No. 1 regiment which prolongs the echelon, as shewn.

Plate 5 illustrates the use of the Machine Battery when making a flank attack, and Plate 6 the advance of the Division when attacked on both flanks, and in front by swarms. In this Plate, two H. A. Batteries are shewn, and as I have already said, this is the smallest force of Artillery which can confidently resist a front attack without support from the other Arms.

PLATE 1.

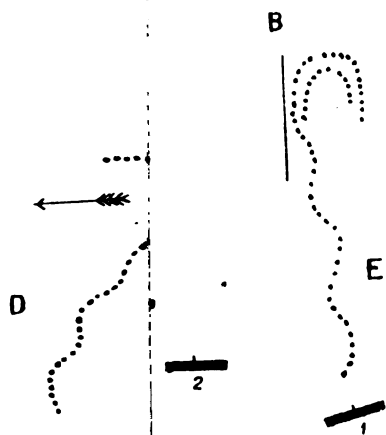
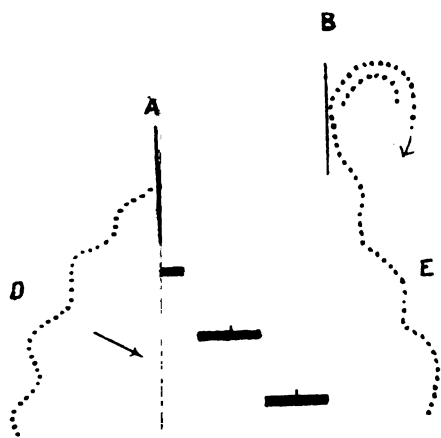
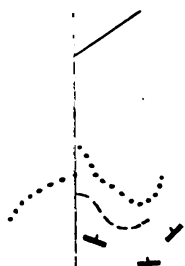


PLATE 3.

NT ATTACK.

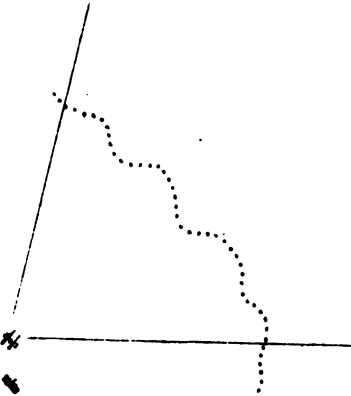
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PLATE 5.



FLANK ATTACK.

Flank movement covered by Machine guns and flank guard squadrons. Guns self-supporting.



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By Lieut.-Colonel P. NEVILLE, 14th Bengal Lancers.

I.—On the rear rank in action.

II.—On oblique attacks.

III.—On sudden attacks when in mass.

The question of how best to utilize the rear rank in a cavalry *v.* cavalry action is one which has at various times given rise to much discussion, but which up to the present time has not been satisfactorily solved.

That during the advance, the rear rank is necessary for the purpose of filling gaps caused by casualties or opening out in the front rank is generally admitted by cavalry officers. It is likewise admitted that at the moment of collision this rank is practically wasted, the men being of no shock value.

If they charge home, it is on top of their own front rank, which is thereby hampered, if not injured, and if the regulation distance of 8 feet is preserved, it is almost an impossibility for the rear rank to pull up when moving at charging pace so as to avoid this.

Moreover, if the troops are armed with lances, it is extremely difficult for the rear rank men, jammed up, as they are against their front rank, to make any use of their weapons.

Various suggestions have been advanced from time to time with a view to obviating this defect. Amongst these may be noticed (*a*) the armament of the front rank with lances and the rear rank with swords:—(*b*) that the rear rank if lancers, should sling lances and use their swords, and (*c*) the adoption of a single rank formation.

None of the above are satisfactory or practicable.

The first (*a*) is all very well for a march past, but in action, the filling up of gaps and the rally after a charge would eventuate in a

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confusion of lances and swords in the rank. It also happens in every collision that lances are broken or lost, which accentuates the undesirability of such an arrangement.

The second (*b*) is faulty because the lancer is taught to believe in his lance as the queen of weapons, and if he has to use a sword in lieu thereof, his confidence is gone: he has little proficiency and no trust in the sword, and his lance, swinging on the elbow of his bridle hand, seriously hampers him in the management of his horse.

The employment of a single rank is universally condemned for many reasons, which it is inexpedient here to discuss.

Which then is the true solution of this question of the rear rank? It is necessary, as we have seen, during the advance; it is useless—if not dangerous—at the moment of collision, when it removes some two thirds of the combatant force from the line of shock action.

It will be well here to go back to the days when cavalry took the highest ranks as a fighting arm—to the days of chivalry. Here we see the heavy armoured knights, on powerful horses, armed with long tilting lances, charging in line. They were followed at some 50 or 60 yards by a second line composed of their esquires and men-at-arms on smaller horses. This second line (or rear rank) had no lances: they were armed with sword, battle-axe and mace. The first line of knights was used to break the enemy's line and throw them into disorder; the second line then coming up entered into the *mêlée*. If the charge was successful, they completed the victory for the knights; if on the contrary, it had failed, they disengaged their masters and enabled them to rally for a new onset.

The principle is as sound to-day as it was in *Cœur-de-Lion's* time, with this exception, that the modern lance being far lighter and more manageable than the tilting spear, there is room to-day for the armament of the second line (or rear rank) with lances instead of swords.

Should the rear rank then always ride 50 yards or so behind the front rank? Certainly not. In the first place this would render manœuvres most difficult, if not altogether impossible; in the second, as we have seen, up to a certain point in the engagement the rear rank is required—well closed up—to fill gaps in the front rank.

At the moment of collision however, the rear rank would seem to be better disposed as in the Middle Ages.

At what moment then should it begin to increase its distance from the front rank?

The simplest answer to this seems to me to be—"on the charge sounding."

The enemy at this moment will be 150 yards off, and the front rank will have about 70 yards or so to cover at the greatest speed compatible with perfect order and cohesion. If then at this moment (always clearly indicated by trumpet call) the rear rank, instead of increasing, checks its pace to 15 miles an hour, and from this slows down to a canter, at the moment of collision they will be some 40 or 50 yards in rear, coming up steadily and in good order. (*Plate I, Fig. 1 and 2*).

They will then be in the best position for aiding the front rank.

It must be borne in mind that in the attack the rear rank is not an offensive but an auxiliary line.

To be of the utmost value, this rank *should not charge at all*. It should arrive, at a collected canter, to the aid of the front rank some 10 or 15 seconds after the collision. Its rôle is not, as in the case of the charging rank, to act as a line, *en muraille*, but independently by single troopers, each man engaging in single combat with whatever individual of the enemy he may find in front of him.

Let us review the situation. The shock of the opposing lines has taken place; the front rank is broken up and in disorder. In several places hostile troopers have ridden clean through our line and got to the rear (*i.e.*, between the front and rear ranks),

These latter have two courses open to them. They may either charge the approaching rear rank, or wheel round and fall upon the rear of the front rank.

Should they adopt the former course their overthrow is hardly doubtful, if the latter, they will be attacked in rear themselves by the nearest man of our rear rank coming up.

Should a rear rank man find no enemy in his immediate front, he should pass through the now broken front rank and join in the *mêlée* as opportunity may offer.

So far we have considered the rear rank of the squadron as a whole: now let us turn our attention to its flank.

There is one very important factor in every engagement which may, if properly managed, greatly conduce towards victory. This is an attack on the enemy's rear after the collision, and this will be the more effective if it takes the form of a surprise.

So great is usually the panic caused to even the best cavalry by an attack in rear, that good authorities have declared one man in rear to be equal to ten in front. If then we are able to assail the enemy in rear, while at the same time guarding the rear of our own squadrons against a like attack, we shall greatly add to our chances of success.

This manœuvre might be carried out by the rear ranks of the flank troops of squadrons. The right and left serrefile non-commissioned officers should take command of their respective flank troop rear ranks, which, unlike the rest of the rear rank, should act as a line and not individually. Immediately on the collision, the commander (the rank having reduced their pace to a canter) should observe how matters have gone in front. If his front rank has manifestly been worsted, and appears in urgent need of assistance, it may be necessary to forego the overlapping movement and ride straight to their support.

If, on the other hand, they are successful, or if the remainder of the rear rank seem to be able to deal with such of the enemy as may have broken through, then the troop rank should wheel outward, and, moving round the flank of the squadron, fall with a loud cheer on the enemy's rear.

Even if the front rank has been worsted in the charge, it is open to argument whether this is not an advisable manœuvre. (*Plate 1, Fig. 3*).

In the weakest squadron there would be available at least 7 men, exclusive of the serrefle on either flank, and these 14 men, as we have seen, attacking in rear would be morally equal to 140 fresh combatants coming up from behind. There would remain in the rest of the rear rank at least 14 men as support to the front rank. This is leaving casualties out of the question. In stronger squadrons the numbers would of course be proportionately increased.

Should the enemy take the initiative and endeavour to envelop our flanks these ranks as defensive flanks will be in the best position to defeat such attempt by charging the out-flanking body during its wheel.

If the above-sketched action of the rear ranks were adopted by our cavalry, it would entirely do away with the weak point which at present exists in all lines—the squadron intervals. These intervals are a *sine-quâ-non* when manœuvring or attacking in line, to give elasticity to that formation, but they are universally regarded as a weakness, much as the joints in the armour of a bygone age. Experience shows that in all charges of extended lines (and the longer the line, the worse the evil) the tendency of squadrons is to open out (whereby the intervals are increased) rather than to close in on one another. The enemy will naturally aim at these openings, just as we shall at gaps in their ranks, and formed bodies passing through cannot but be regarded as a serious danger, since by attacking our rear they are very liable to cause a panic, even with the best troops.

A glance at *Plate I., Fig. 4.*, will show that if the suggestions contained in this paper were carried out, any hostile parties attempting to get through the intervals would find themselves caught on both flanks instead of having, as at present, a clear field.

Cavillers may object, saying—"How do you propose to get two ranks of 7 men or more through an interval of 12 yards?" To this I reply—"I do not care how they get through."

Owing to the tendency to open out, before alluded to, at the moment of collision, the squadron intervals are usually more than 12 yards, and regimental intervals are normally 24 yards.

This, however, is not the point.

It is not the order or formation of the attack, but simply the moral effect of *any* attack in rear that constitutes the strength of the manœuvre. Moreover, as the front rank on both sides will be broken up after the collision, the actual attack on the enemy's rear must be made by individuals. To charge into the thick of the *mêlée* in an indiscriminate fashion would be as dangerous to friend as foe.

For offence and defence therefore, this disposition and action of the rear ranks appears to me sound and advisable.

On Oblique Attacks.

It will not infrequently happen in actual war that a line, or some portion thereof, will be required to execute an attack in a direction oblique to its advance, *i.e.* to the half front.

According to the Drill Book, the word of command for this manœuvre is—"Troops, Half Left (or Right), Form Squadrons," followed by "Form Line," if so desired.

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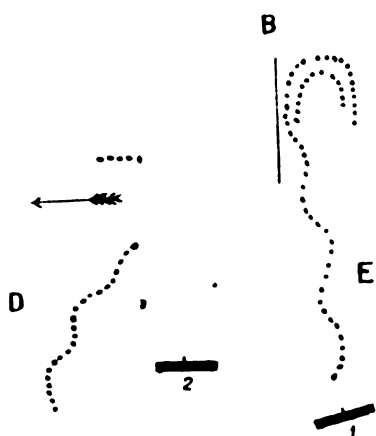
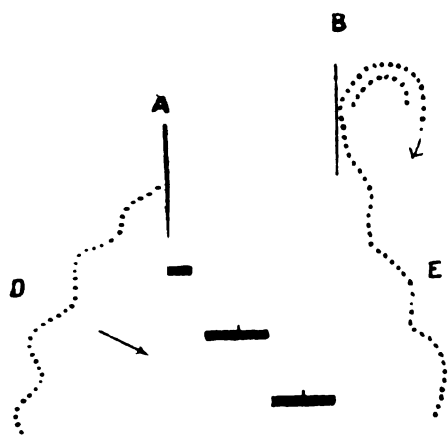
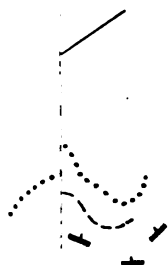


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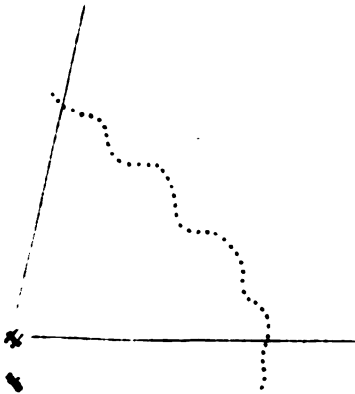
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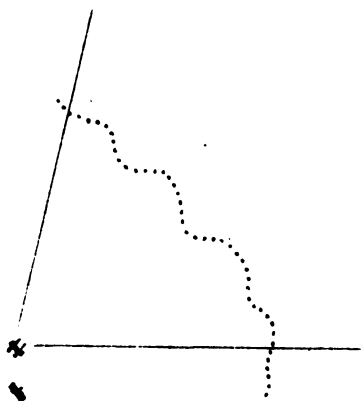
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Flank movement covered by Machine guns and flank guard squadrons. Guns self-supporting.





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It must be borne in mind that in the attack the rear rank is not an offensive but an auxiliary line.

To be of the utmost value, this rank *should not charge at all*. It should arrive, at a collected canter, to the aid of the front rank some 10 or 15 seconds after the collision. Its rôle is not, as in the case of the charging rank, to act as a line, *en muraille*, but independently by single troopers, each man engaging in single combat with whatever individual of the enemy he may find in front of him.

Let us review the situation. The shock of the opposing lines has taken place; the front rank is broken up and in disorder. In several places hostile troopers have ridden clean through our line and got to the rear (*i.e.*, between the front and rear ranks),

These latter have two courses open to them. They may either charge the approaching rear rank, or wheel round and fall upon the rear of the front rank.

Should they adopt the former course their overthrow is hardly doubtful, if the latter, they will be attacked in rear themselves by the nearest man of our rear rank coming up.

Should a rear rank man find no enemy in his immediate front, he should pass through the now broken front rank and join in the *mêlée* as opportunity may offer.

So far we have considered the rear rank of the squadron as a whole: now let us turn our attention to its flank.

There is one very important factor in every engagement which may, if properly managed, greatly conduce towards victory. This is an attack on the enemy's rear after the collision, and this will be the more effective if it takes the form of a surprise.

So great is usually the panic caused to even the best cavalry by an attack in rear, that good authorities have declared one man in rear to be equal to ten in front. If then we are able to assail the enemy in rear, while at the same time guarding the rear of our own squadrons against a like attack, we shall greatly add to our chances of success.

This manœuvre might be carried out by the rear ranks of the flank troops of squadrons. The right and left serrefile non-commissioned officers should take command of their respective flank troop rear ranks, which, unlike the rest of the rear rank, should act as a line and not individually. Immediately on the collision, the commander (the rank having reduced their pace to a canter) should observe how matters have gone in front. If his front rank has manifestly been worsted, and appears in urgent need of assistance, it may be necessary to forego the overlapping movement and ride straight to their support.

If, on the other hand, they are successful, or if the remainder of the rear rank seem to be able to deal with such of the enemy as may have broken through, then the troop rank should wheel outward, and, moving round the flank of the squadron, fall with a loud cheer on the enemy's rear.

Even if the front rank has been worsted in the charge, it is open to argument whether this is not an advisable manœuvre. (*Plate 1, Fig. 3*).

In the weakest squadron there would be available at least 7 men, exclusive of the serrefile on either flank, and these 14 men, as we have seen, attacking in rear would be morally equal to 140 fresh combatants coming up from behind. There would remain in the rest of the rear rank at least 14 men as support to the front rank. This is leaving casualties out of the question. In stronger squadrons the numbers would of course be proportionately increased.

Should the enemy take the initiative and endeavour to envelop our flanks these ranks as defensive flanks will be in the best position to defeat such attempt by charging the out-flanking body during its wheel.

If the above-sketched action of the rear ranks were adopted by our cavalry, it would entirely do away with the weak point which at present exists in all lines—the squadron intervals. These intervals are a *sine-quid-non* when manœuvring or attacking in line, to give elasticity to that formation, but they are universally regarded as a weakness, much as the joints in the armour of a bygone age. Experience shows that in all charges of extended lines (and the longer the line, the worse the evil) the tendency of squadrons is to open out (whereby the intervals are increased) rather than to close in on one another. The enemy will naturally aim at these openings, just as we shall at gaps in their ranks, and formed bodies passing through cannot but be regarded as a serious danger, since by attacking our rear they are very liable to cause a panic, even with the best troops.

A glance at *Plate I, Fig. 4*, will show that if the suggestions contained in this paper were carried out, any hostile parties attempting to get through the intervals would find themselves caught on both flanks instead of having, as at present, a clear field.

Cavillers may object, saying—"How do you propose to get two ranks of 7 men or more through an interval of 12 yards?" To this I reply—"I do not care how they get through."

Owing to the tendency to open out, before alluded to, at the moment of collision, the squadron intervals are usually more than 12 yards, and regimental intervals are normally 24 yards.

This, however, is not the point.

It is not the order or formation of the attack, but simply the moral effect of *any* attack in rear that constitutes the strength of the manœuvre. Moreover, as the front rank on both sides will be broken up after the collision, the actual attack on the enemy's rear must be made by individuals. To charge into the thick of the *mêlée* in an indiscriminate fashion would be as dangerous to friend as foe.

For offence and defence therefore, this disposition and action of the rear ranks appears to me sound and advisable.

On Oblique Attacks.

It will not infrequently happen in actual war that a line, or some portion thereof, will be required to execute an attack in a direction oblique to its advance, *i.e.* to the half front.

According to the Drill Book, the word of command for this manœuvre is—"Troops, Half Left (or Right), Form Squadrons," followed by "Form Line," if so desired.

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As the occasions when an oblique attack is likely to be effective are fleeting, and prompt action is necessary to prevent the enemy from foreseeing and parrying the assault, it would appear inadvisable in such attacks to form line at all.

Another reason for preferring echelon to line is that it may not be necessary (as when striking at the flank of an advancing enemy by an overlapping portion of the first line) to employ all our squadrons at once. One squadron is a sufficient force to assail the flank of a line. Any others that may be available would be better employed in falling on its rear. Before leaving the subject of line from half column, I desire to say that the method of bringing up squadrons laid down in the Drill Book, i.e., by the incline, is a bad one. So large a body of cavalry as a complete squadron in line should not, in my opinion, make use of the incline except for very short distances. When the distance to be traversed obliquely exceeds the equivalent of a squadron interval, it is better in all cases to make use of the half column of troops.

Supposing then that a line of 4 squadrons is required to make an attack half left. The order is given—“*Troops Half Left, Form Squadrons.*” This brings the regiment into half column of squadrons from the left. The defects of this formation for attack are threefold. (*Plate II, Fig. 1.*)

1. The extent of front covered is only 174 yards, as against 228 yards (with 12 file troops) in line.

2. The overlapping renders half a troop useless in the rear squadrons.

3. It is far more difficult to maintain a true direction in half column than in direct echelon. The consequence is that nearly always, especially when there is any dust, the rear squadrons diverge outwards as in *Plate II, Fig. 2.*

The second defect may thus be remedied. On the command “*The echelon will attack,*” the inner flank troops of all but the leading squadrons fall back about 30 yards as in *Plate II, Fig. 3.*

Here they will be well placed. If the enemy overlaps any squadron on its outward flank and attempts to wheel round so as to take it in rear, this refused troop can wheel outward and charge along the rear of the squadron. If no such attempt is made, it may wheel round the inner flank and attack the enemy in rear. Defects Nos. 1 and 3, however, remain.

To obviate these and secure the advantages of a broad front and true direction, I would suggest the following. (*Plate II, Fig. 4.*)

Word of command by commanding officer—

“*Half Left—Form Echelon of Squadrons.*”

4th Squadron. “*Troops, Half Left—Form Squadrons.*”

3rd Squadron (after advancing 12 yards), as above.

2nd and 1st Squadrons (after advancing respectively 24 and 36 yards), as above.

This manœuvre will bring the regiment into direct echelon of squadrons at $\frac{3}{4}$ distance (45 yards; this distance must not be increased without a distinct order), with intervals of about 3 yards.

The front occupied (with 12 file troops) will be 201 yards, or the same as in line, less three diminished intervals of 9 yards each. Each successive advance of 12 yards at a trot takes $3\frac{1}{16}$ seconds.

On Sudden Attack when in Mass.

A sudden attack on a mass is an unlikely thing to happen in war, as this formation is, as a rule, abandoned except by the reserve, on coming within range of the enemy's artillery. It is, however, a very favorite problem given by inspecting officers as a test of readiness of resource and promptness of action; it is also provided for in the Drill Book, but in a way which is very generally considered to be unsatisfactory.

"As a rule," says sub-section V., Sec. 8, Part IV., "when line is required to the front or half front, line of squadron column will first be formed in the required direction, * * * but in case of urgent necessity the following method may be adopted—The direction being first changed by shouldering, the command "*Form Line*" may be given, when the two flank squadrons will form line on the right and left respectively, and immediately incline sharply outwards until the central squadrons have room to deploy in succession."

To begin with, the method of forming line from mass by the intermediate stage of line of squadron columns, is one that is condemned by the best authorities of the French school of cavalry tactics.

Aubier, who is now well known to be the mouth-piece of General Gallifet, say:—The line of squadron columns is a dangerous transition formation, condemned to disappear. It is dangerous because it is a deep formation, and as such, forms a very favourable target for shrapnel fire, the error of which is to be found, not in the horizontal, but in the vertical plane.

It is quicker and better, when line is required, to form the mass into a quarter column in the proper direction and then deploy, first into an echelon of squadrons, which can afterwards at any moment be brought up into a general alignment. An echelon of squadrons in line is the most difficult of targets for artillery, as no two squadrons are at the same range, and a two-deep formation leaves very little latitude for error in the vertical plane.

The example given of a line formation to meet a sudden emergency in the book is not a very happy one. The manœuvre is very slow and the flank squadrons, moving outward by the incline, invariably (in my experience) lose their direction when fronted.

The following is suggested as a better plan:—

Wheel the mass by shouldering into the proper direction, and then give—"Form Double Echelon."

The flank squadrons, on this command, wheel into line outwards and take ground square to the flanks, while the central squadrons, continuing their advance, form line on the right and left respectively of their leading troops as soon as they have room, which is almost immediately. The flank squadrons having taken ground outward for 36

PLATE III.

Fig. 5

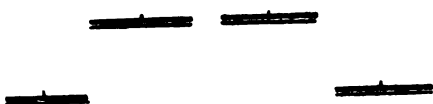


Fig. 4

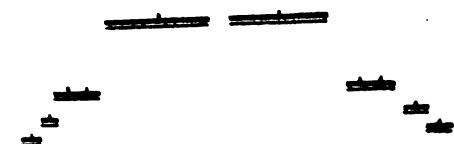


Fig. 3.

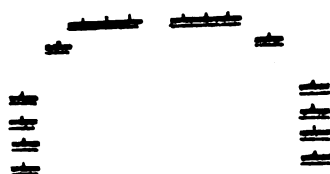
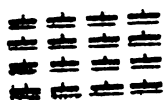


Fig. 2



Fig. 1



yards, wheel into squadron column to the front and form squadron on their outward flank,

This will be found a simple and rapid manœuvre, well calculated to meet any sudden emergency. (*Plate III.*)

Explanation of Plates.

PLATE I....*Fig. 1.*—Rear rank checking the pace on the “charge” sounding.

Fig. 2.—Rear rank at the moment of collision.

Fig. 3.—Rear rank entering the *mêlée*; the flanks wheeling outward to attack enemy in rear.

Fig. 4.—Showing intervals guarded by proposed manœuvre so that they are no longer a source of weakness.

PLATE II....*Fig. 1.*—Showing defects of Half column of squadrons for attack.

Fig. 2.—Showing tendency to diverge from true direction.

Fig. 3.—Proposed remedy.

Fig. 4.—Proposed alternative formation.

PLATE III.....—Formation of double echelon from Mass.

NOTES ON NATIVE CAVALRY.

By Captain V. M. STOCKLEY, 16th Bengal Cavalry.

The fighting value of the native cavalry, great as it is, would, it seems to me, be much increased by the following measures :—

(I.)—All regiments to be armed with the lance.

(II.)—The sword to be only slightly curved.

(III.)—Lead cutting to form regular part of training.

(IV.)—Volley firing of musketry course to be extended up to 1000 yards.

(V.)—Minimum height of full grown remount to be raised to 14·3.

(VI.)—A strong single rein to be used instead of double reins.

(VII.)—Gaiter boots to be worn.

To take these points separately.

(I.)—*The Lance*.—Whatever slight disadvantage the lance may be at in a close *mêlée* is more than compensated for by its great superiority over the sword in the first shock of cavalry versus cavalry and in the attack on infantry and artillery.

As to the cavalry *mêlée*, unless it is a very close one, the lance will still have the advantage to judge by the competitions at assaults-at-arms, where in mounted combat, lance versus sword, though carried on in a small circular enclosure the lance generally wins.

Sir Evelyn Wood in his “Achievements of Cavalry,” writing about Bredow’s famous charge at Mars-la-Tour mentions amongst other incidents that in the retreat of the Germans after the charge when pressed by overwhelming numbers of French cavalry, trooper Schobb, 4th Squadron 16th Uhlans, was attacked by several cuirassiers. His horse was blown and those of his enemies comparatively fresh—but he killed one of them straightway. Then turning the horses of two others by striking their heads, speared both their riders, and thus killed three swordsmen.

No doubt instances might be found of one swordsman killing three lancers, nevertheless the above example is worth noting when discussing the value of lance versus sword.

Sir Evelyn Wood also writes how in this charge when the German lancers rode into the French batteries the gunners sought shelter under their guns and limbers but were easily reached and speared.

A non-commissioned officer, 16th Uhlans, captured a gun single handed by spearing in succession the three drivers of the team trying to escape. Marshal Bazaine reported that in the two batteries ridden into by the Uhlans only one gunner remained effective and unwounded.

An extraordinary case of the advantage given by the length of the lance is mentioned in Marbot’s Memoirs. In an action of the 1813 campaign in Germany, he was ordered to charge an infantry square.

His regiment was armed with swords only. It had been raining for many days, and the ground was in such a state that cavalry could hardly go faster than a walk. It was impossible therefore to get up any impetus for a shock. On the other hand the continuous rain had made it impossible for the infantry to fire their muskets. The result was that Marbot's cavalry was brought to a stand-still close to the bayonets of the infantry and nothing could be effected by either side. The cavalrymen with their swords could not reach the infantrymen behind their bayonets, and both sides stood looking at each other. This curious situation was put an end to by the arrival of a regiment of lancers, who came up and quickly began killing the infantry men as they stood or knelt in their ranks by the superior reach of their lances. In a short time the square was broken up and the infantry routed with great loss.

(II.)—*The Sword*.—In case anything happens to his lance, the lancer has his sword to fall back on. The very curved sword used by most native cavalry regiments seems to me a mistake. If it were only slightly curved the point could be used with effect as well as the edge. I doubt the much curved sword being very superior for cutting to the slightly curved one. Whatever advantage there may be does not compensate for the difficulty of making a good use of the point. The native cavalry are taught the British cavalry sword exercise and their sword should be in accordance with such exercise.

(III.)—*Lead Cutting*.—There is nothing, I think, better to test a man's power of skilful cutting than his ability to cut lead cleanly and neatly. Cuts mounted should be all done on leads about a third of an inch thick, cuts on foot on leads about an inch thick. All four cuts can be practised mounted or on foot by placing the leads on posts of convenient heights. I have put my own squadron through a course of lead cutting during the past six months and I consider it has greatly increased their value as swordsmen.

The cuts at the regulation post practice should be all done on leads. A few spare swords per troop of the same pattern as used by the regiment should be kept specially for lead cutting. Lancer regiments should do sword post practice as well as lance post practice.

(IV.)—*Volley Firing*.—In dismounted action cavalry will generally have to fire volleys at an enemy from 400 to 1000 yards away. It seems strange therefore that our musketry course should limit our practice to 600 yards. Very effective volleys can be fired with the M. H. carbine up to 1200 yards.

Twenty more rounds per man might be added to course for volley firing at the longer ranges.

(V.)—*Horses*.—Many of the horses in our regiments are too small. The native cavalry is trained like the British cavalry to shock action and it would be greatly to our advantage to have no very small horses in the ranks. In fact I do not see how our men can do the work expected of them in these days on some of the horses or ponies that are seen in the ranks. One rupee should be added to the sowar's monthly subscription to the chunda fund, and in proportion for other ranks.

The minimum height of horses should be raised from 14.2 to 14.3. It should be the endeavour of all regiments to have horses sufficiently stout and averaging fifteen hands. To effect this no country-breds should be allowed to go to British cavalry; British cavalry should be confined to Australians and other foreign breeds; native cavalry to country-breds. There would then be a sufficient supply of suitable horses for the native cavalry.

It is dead against the interests of the native cavalry to allow country-breds to go to British cavalry.

(VI.)—*Single Rein*.—I consider double reins are hampering and confusing and that from their use there is a direct loss of fighting power to a horseman. In all the rough work a cavalry soldier may have to go through on perhaps an excited and plunging horse, quick manœuvring, galloping over broken ground, the charge, *mêlée*, combats, pursuit, more combats, rally and ready again, in all this with only one hand for his reins, the other required for his lance or sword it seems to me an absurdity to give a man double reins.

A simple strong single bit rein is the right thing for a cavalry soldier. The rein should be sewn together with loops for the fingers, with a lash end; such a rein can be dropped on the horse's neck and taken up again in an instant without trouble or thought.

Some say that the bridoon rein is required for jumping. It is in no way necessary. Those regiments which at present have the single bit rein only, jump as well as the other regiments with their double rein. The soldier is directed by regulations to ride only on the bit rein. Is it to be supposed that during quick manœuvring or an advance in the field, the men on coming to a jump will draw up their bridoon reins and lengthen them again on getting over the jump and keep on repeating this at every obstacle they come to? No; such finnickish minutiae are not thought of by bodies of cavalry in field work. The men though hampered by bridoon reins will not use them, unless it is by mistake, the result of confusion, and then the man will not know what he is riding on, bit or bridoon, they will be all mixed up together.

Make the single rein as strong as may be necessary, have steel chain sewn in, the weight will be an advantage, and help to keep the horse in hand.

(VII.)—*Gaiter Boots*.—The almost universal adoption of putties in the native cavalry I think a mistake; men in the ranks require the protection of stiff leather from knee to foot. They are pretty well jammed sometimes and often hurt by kicks. In riding through jungle or charging into an enemy the protection afforded by high boots or gaiters is an advantage. The high boot is difficult to pull off and on, especially in wet weather, so the gaiter and ankle boot should be adopted, with which there is no difficulty of any kind. The gaiter should come above the knee like the Napoleon boot. Knee protection is important. There are several good and simple patterns of combination gaiter-boots to choose from; if properly made they look as well as the high boot itself.

A PLAN
FOR RAPIDLY ADJUSTING THE BACKSIGHT OF THE M. H.
RIFLE FOR ALL DISTANCES UP TO 900 YARDS.

By Colonel H. A. ABBOTT, 15th Sikhs.

It has doubtless occurred to every one who takes any interest in the infantry weapon that for practical purposes the backsight of the M. H. rifle is a most unsatisfactory one. It is very difficult to adjust the sliding bar under the most favorable circumstances and almost impossible to do so with even approximate accuracy when rapidity is essential or when the light is not of the brightest.

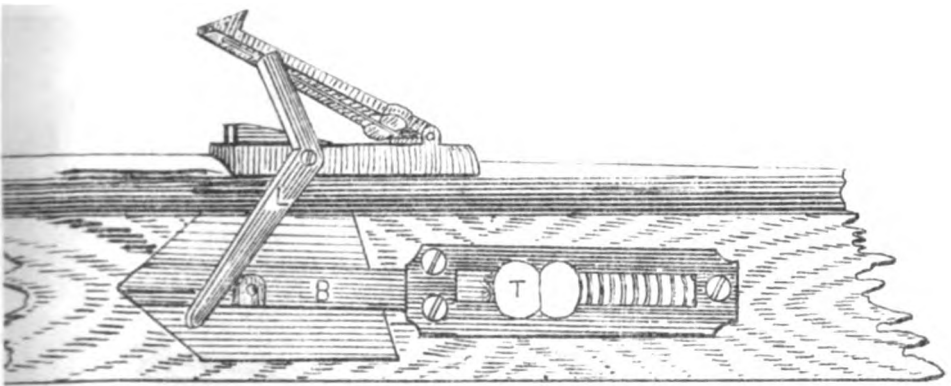
This defect is of course chiefly felt when rapid volleys have to be fired at an object which is constantly shifting its position. Taking for example a charge of cavalry on a section of infantry from a distance of say 900 yards; with the backsight as it is at present the very best section will seldom be able to deliver more than three *properly sighted* volleys before the cavalry are on them, the delay being caused almost entirely by the difficulty of adjusting the sights before each volley. Whereas, with a quickly adjustable backsight, the same section would with perfect ease pour at least nine volleys into the assailants *i. e.* one for each 100 yards of their advance.

The fact is that some arrangement is urgently required which will enable the soldier to adjust his sight even when the light is not good enough to see the marks on the flange and when rapidity is a desideratum, and until some such arrangement is discovered and adopted we cannot hope to reap the full benefit of the vast improvement in fire control and the handling of the rifle generally which has been so wisely insisted on during the past few years.

That this object is easy of attainment the accompanying sketches will shew. By the lever arrangement therein shewn the firer is enabled to obtain the sighting he requires by a motion of the left thumb and in a fraction of a second, and he can even do so *after* having come to the "present" if necessary. The construction is simple and interferes in no way with the existing back sight. *Faute de mieux* it is far and away better than having things as they are at present. The writer, however, feels confident that if the attention of experts and others is given to it some still better method is sure to be discovered and it is in the hope of attracting such attention to a subject which is well worthy of it that the above remarks have been written.

Plate I.

BACKSIGHT AT 900 YARDS.



Aim is of course taken over the backsight, as at 400 yards.

Note.—T. Thumb-piece.

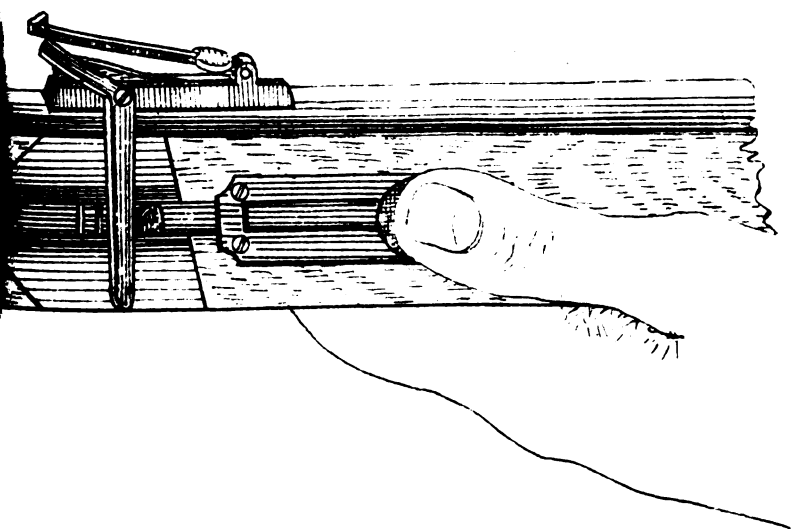
**B. Spring bar with catch which gives a slight check
at each 100 yards.**

L. Lever.



PL. II.

BACKSIGHT AT 500 YARDS.



MASSÉD FIRE OF 80 GUNS (10 BATTERIES) AT THE KIEV CAMP OF EXERCISE 1893.

Translated by Captain J. VANS-AGNEW, 3rd Madras Lancers.

The following translation contains the observations of General Dragomiroff on the masséd fire of 10 batteries of artillery, at the annual camp of exercise near Kiev, of the troops in the Kiev military district. In 1891, the translator visited the camp several times. There were 26 batteries of horse and field artillery there. The country is like that round Aldershot—undulating and sandy, with strips of fir copse. The observations refer to August 1893.

Fire of a battery of 80 guns.—"The general idea was that the artillery of an army corps, advancing by two roads, receives the order to rapidly take up a position and cover the deployment of the army-corps. The enemy was represented by three separate groups of targets representing artillery (48 guns). The batteries for the firing practice formed two brigades, each consisting of three light and two medium batteries. In each brigade the light batteries formed one group, and the medium batteries another group, each being under a group commander.

"The commander of the corps artillery began by uniting the medium artillery under one commander, making them into a division of four batteries. The two brigade commanders were then deprived of their commands, as only one group each remained to them, each having already its own commander. However, by this disposition the corps artillery was formed into three groups corresponding to the disposition of the enemy. The transmission of orders, concentration of the medium battery groups in one place, reconnaissance and movement to take up position, occupied one hour and seventeen minutes. Where was the necessity for the formation of the third group, which took half an hour, and kept several batteries in an advanced position under fire? In spite of the slowness of the preliminary dispositions, and movements, the position taken up by the batteries was by no means well chosen. The right flank was thrown back, and the range was extreme. Firing was commenced by batteries independently on account of the considerable range, but in certain cases commanders of groups gave batteries, whose firing was inaccurate, ranges taken from other batteries.

"In eight minutes, it was announced that the enemy's left battery (18 guns) had ceased firing.

"With the intention of concentrating fire on the centre group of targets, the artillery commander sent verbal orders to the *batteries* of the group, which had silenced the group opposed to it, designating their new targets. From his position, he was unable to see what was

the best target for each battery of the group to fire at, and should therefore have confined himself to naming the target for the group, leaving the group commander to point out its target to each battery. The concentration of fire, however, did not take place, as the order was not delivered accurately.

"Having received the order to take up a more advanced position, the artillery commander sent a verbal order to the right group to advance, and to the other groups to commence their advance, when the right group should have opened fire from its new position. Four minutes later he completed this disposition by sending a verbal order to the left group to increase the rapidity of its fire. Without giving the right group time to take up its new position, the artillery commander altered his disposition, and ordered the centre batteries to advance without waiting for the right group to open fire, and eight minutes later gave the same order to the left group. Thus, in place of an advance by echelons under cover of the batteries in position, there was an almost simultaneous cessation of fire, and an almost simultaneous reopening of fire from the new position. Both at the first and second position fire was opened about four minutes from the time the batteries started.

"The intention had been to concentrate the fire of seven batteries on the centre group of targets, but as a matter of fact the damage done to this group was very slight. In a word, almost the opposite of what was intended took place. This clearly points to defects in the mechanism of command. Evidently the senior ranks want practice in command, and the groups are cumbrous and wanting in mobility. The movement of the batteries from the first position to the second, counting from the time the order was given to the first shot from the new position, occupied 22 minutes. The distance covered was between 400 and 600 yards. It is of course understood that an advance from a position at 3,000 yards would not be only 400 yards, as that would not be worth while. But let us suppose that the batteries were stopped by a line of skirmishers 1,500 yards off, then on learning that the skirmishers had retreated, the advance should be continued, because the chief object for the action of artillery is not this chance target, but the main position and force of the enemy. At the nearer ranges from the second position fire was carried on independently by batteries, as was regulated by the circumstances. But on the appearance of new targets on the main position (raised targets and smoke balls) representing fresh batteries arrived in line, and closed bodies, the commander of the artillery and group commanders should have taken the command into their own hands. It was wrong to confine themselves to ordering the right group, or centre echelon to fire on the reserves generally. It was necessary to point out special targets. The commander of a group does not know if he alone is firing at any target, or in conjunction with others, and consequently the firing might become extremely confused and objectless. The group commanders, therefore, should not only have pointed out targets to groups, but should have divided the target among the batteries of the group. This should be mere A, B, C, ; but it does not seem to be completely understood.

"The result of the firing at the longer distance showed .7 hits to shells fired, and at the shorter distance 1.2. This is poor. The rate of firing in several batteries in the first position was seven shots a minute. At the nearer distance, from which fire was only kept up for five minutes the rate did not exceed five shots a minute. This is, of course, insufficient, but is partly explained by the bad position chosen for the batteries at the second distance, from which the targets were not well seen, and also points to slowness of fire, which is generally more evident, in proportion to the shortness of time fire is kept up on each target.

"As a general conclusion I must observe that I see considerable success in the work of batteries independently. But the batteries do not know how to work together. Absence of practice leads to great slowness in combined action, and paralyses the efficiency of fire.

"It is a strange thing that 10 batteries which separately are sufficiently mobile and efficient, should become a clumsy and immobile unit, the only reason appearing to be, nothing inherent in the formation, but only that each waits on another, and gets in another's way.

"The service of transmission of orders was weak. Orders were distorted, and the report sent in by the officer observing the course of the fire was without signature and neither the time nor place of observation and despatch were noted.

"It is not possible to remedy these weaknesses, by the method of practising group firing only, especially on such a large scale, because the expenditure of ammunition would be prohibitory. Gunners and officers must practise unremittingly in the field.

HOME THROUGH PERSIA.

By Lieut. D. S. Buist, 2nd Lancers Hyd. Contgt.,

Two thousand three hundred years ago a Persian Monarch reigned "from India even unto Ethiopia over an hundred and seven and twenty provinces." Then the kingdom was at the height of its power and it looked as if the "king of kings" would become a potent factor in shaping the destinies of the world. But during the reigns of his successors the onward wave of conquest was broken and Marathon Thermopylæ and Salamis asserted the supremacy of the west.

The history of this old world civilization is writ large in letters of stone, and the records of its wars and conquests are duly chronicled in Greek, Roman and native annals. It disappeared before the "Fierce Fanatics of Arabia," who overran the country from the Euphrates to the Oxus, destroying, with enthusiastic bigotry all that was most sacred, grand or useful in ancient Persia.

With the Arab conquest ended, as the national creed, the religion of the Magi, and in its place rose the all devouring faith of Islam. But the conquerors were unable to eradicate the old philosophy, and even to this day, in spite of much persecution, the doctrines of the Zend Avesta are held sacred by a small and despised sect, now known by the name of Guebres.

The modern history of Persia may be said to begin with the reign of Shah Abbas, at the close of the sixteenth century for it was in his time that diplomatic intercourse was established with the west. The Sufi king received an English ambassador with great distinction, and entertained him sumptuously, bestowing on him, as a special indication of his favor, the hand of a Circassian bride. He who has been much in Persia cannot have failed to have heard much of this great king. Almost every work of public utility now remaining in the country owes its origin to his beneficent rule, caravanseras, mosques, colleges, bazaars, bridges, tanks and aqueducts scattered throughout the length and breadth of the country, proclaim him the most enlightened administrator of his race.

From the date of his death to the accession of the present monarch, the successful raid of Nadir Shah into Hindustan is almost the only landmark that stands out from the waste of discord and decay recorded in the annals of the kingdom. In modern times however the country has experienced a long and peaceful reign, and made considerable progress. Its present ruler, Nasir-ud-din Shah, succeeded to the throne in 1848, and in the early years of his reign exercised avarice, cruelty and oppression worthy of his position as an eastern despot. But the establishment of legations by the great European powers at his court has tended to restrict the action of the sovereign, and to keep in check

excesses at which his predecessors would not have hesitated. To all appearances he has established himself firmly on the throne, but the future dynasty is uncertain, and the recent riots over the tobacco monopoly, proved on what a shallow foundation the authority of the Shah must rest. The shadow of the Czar had already fallen over the northern portions of his kingdom ere he ascended the throne, and now-a-days his great northern neighbour could at any time appear in force on his frontiers, and threaten his capital; but faint opposition could be offered and the House of Kajar, like many of its allied Khanates, would become a vassal of the Great White Czar.

To a military officer Persia is necessarily a most interesting country, by reason of its being so important a factor in the solution of the great Central Asian problem, while to an antiquarian its ancient monuments are of surpassing interest, as many of the answers to the questions to which they give rise, have not yet been placed beyond the pale of philosophic doubt.

The seaport of Bushire may be termed the southern gate of Persia, as the great highway inland starts from this miserable place. From the fact of such a harbour remaining the principal port of the Shah's dominions we are able to form a pretty accurate estimate as to the material progress of the country. Its site is a long low spit of sand, separating a large, shallow, bay from the Persian Gulf, and its general aspect as viewed from the roadstead is unimposing, mean, and desolate. Nor does its appearance belie it, for except the various types of humanity represented among its inhabitants, there is absolutely nothing of interest in the city.

Here with the kindly help of the Resident I fitted out my caravan. This occupied two days, but on the third, having embarked my mules, we spread our sails to a gentle breeze, and were slowly wafted over to the opposite shores of the lagoon. At Shief of course there was no landing place, and fully one hundred yards of soft slimy mud separated us from hard dry land. The problem of landing the beasts and their loads had to be solved, but so great was the difficulty in accomplishing this that fully half an hour elapsed before the cart reached *terra firma*.

It was towards evening when having adjusted the loads on the mules backs we at last set out on our first march of 21 miles. The track was rough in the extreme, to move out of a walk was well nigh impossible, and our first attempt to do so brought one of our mules to his knees. For the first day and a half we traversed what the Persians call the Dashistan, that is the low-lying plain stretching between the sea and the great mountain barrier, which forms such a characteristic feature in the scenery of the Gulf. Here and there were patches of cultivation, intermingled with small groves of date palms. The hard calcined soil however did not appear to offer a generous return to the exertions of labour and the general appearance of the country was bleak and desolate.

At midnight we reached our first halting place the handsome caravanserai of Borasjun. This proved to be a large and imposing building and presented more the appearance of a fort than a wayside hostelry.

Later I found that as a rule Persian caravanseras are all built on the same plan. They are constructed in the form of a square, at the corners of which are placed circular towers which rise only just higher than the outer walls. These are bare and windowless, except in the front elevation, from the centre of which springs an arch, through which an entrance is gained to the interior. This consists of a large open square. All around are arched recesses, each with a small windowless room behind them. In dry weather the animals are picketed in the open square, but in wet they are stabled in stalls at its four corners, and the keeper of the Khan has generally stored a large amount of fodder for their consumption.

Shortly after leaving Shief we had come upon a Persian telegraph wire. Fortunately at that time there was sufficient light to make us aware of its existence, for had it been otherwise, we had run the risk of meeting with serious injury, as the wire crossed the road at so low an elevation that we had to bow our heads to pass under it. A little later we met the tightly stretched wires of the Indian Government, which run in an unbroken line more or less along a road right onward to the capital. This line consists of three wires supported on iron posts, and was constructed about 25 years ago, but not before many obstacles, of which the political were not less than the physical, had been overcome. As a political institution it is of inestimable value to our Imperial interests, while to the government of the Shah it is of the greatest use in opening up and developing his dominions.

At Borasjun I was much struck by a remark a Persian made to me, when in the course of conversation I referred to the enterprise of the government of India in constructing this great work. "Ah, Sahib" he said. "One has only to look at the two wires which run side by side outside this village to see the difference between English and Persian methods, the one is straight, upright, and kept in perfect order, the other bent, dilapidated and twisted."

My first night passed in a caravansera proved a most agreeable one. I slept soundly, awoke refreshed and got under weigh at seven next morning. My route now lay along the base of the great chain which shuts Persia off from its southern coast line. The track was hilly and stony, and the sun mounting high in the sky kept pouring down upon me the increased volume of his rays. We crossed several small streams whose waters were so impregnated with petroleum that even the animals refused to drink of them. As we were nearing Dalikti we came upon the camp of an Austrian engineer in the employment of the Persian mining concessionaries, who was prospecting this part of the country for petroleum. With him I paid a visit to the workings, and later, over our cigars and some excellent Shiraz wine we discussed the country and its people. He told me his boring had got down to a depth of 850 feet, that he had struck oil, but not in paying quantities, and that should he not be more successful at 1,000 feet, he proposed abandoning this shaft and transferring his boring appliances to the island of Kishen, at the entrance to the Persian Gulf. His boring was situated under a high cliff, and close to the embrasure of a natural tunnel, from which

rushed out a torrent of blackish grey water so impregnated with rock oil as to be absolutely undrinkable.

The day proved an exceedingly hot one, the mercury registering 97° in my host's tent, and I was easily persuaded to stay with him till evening. To sleep was well nigh impossible and the long hours hung heavy on our hands, but in due course the time for again setting out arrived. Shortly after leaving Dalikti the road forsakes the plains for the hills, and enters a steep and narrow valley which cleaves the mountains to their base. Here began an ascent of the Kotal Malo the first of the rugged passes that lead to the interior. After a long ascent through a narrow trough shaped chasm, and a lesser descent on the other side of it, we came upon a large, rapid and quite unfordable river. The road lay along its banks, and shortly after passing the remains of an old bridge we crossed the stream on a handsome modern one of six arches. With few exceptions the architects of Persian bridges seem to have adopted one universal plan. The embanking of the approaches seems to them quite superfluous, and the structure itself springs from ground only just higher than the natural banks of the stream. The roadway is carried upwards at a steep angle, and culminates about the middle of the river in a high central arch. The causeway is very unevenly laid with small blocks of rough hewn stone, and where it is not extremely uneven, it is so slippery that baggage animals can scarcely retain their footing; especially is this so in the steep descent.

After marching along the river banks for some distance we struck into the hills, and continued the ascent of the great Kotal or rock ladder. The track becomes the more rough and steep the higher we ascend, now it narrows to a width only sufficient for a single mule to march upon, and now it strikes deep into the hill sides. When we were approaching the steepest part of the ascent we came upon a made track, laid with rough flag-stones which climbed up the face of the mountain at an angle of about 45°. To climb this stony ladder seemed well nigh impossible, and on arriving at its base we found the mule track turned off to the right, and by a series of short steep zig-zags at the side, but clear of the metal pathway, reached the summit. Here a basin like a plateau surrounded by hills stretched in front of us, at the head of the pass stood a ruinous caravansera, and filing past it was a large caravan of some 150 animals, whose clang of bells had fore-warned us of their approach. It was lucky we met this caravan where we did, for had we come across it on the steep rock ladder, a tiresome delay had been forced upon us. Fairly level road led to the village of Konartakhtoh where we put up for the night.

In the low lying districts of Persia night marching is much resorted to, as with the thermometer at 120° a journey of a few miles becomes a very laborious task both to man and beast. So it was not till the evening of the next day that we again took to the road. After a long ascent up a steep mountain track we reached the plateau of Kamarij. Here it was that about the middle of the last century, Karim Khan Zend fought that decisive battle with his rival Asad Khan, ruler of Arbyan, which placed the whole of Persia at his feet. After leaving

the plateau of Kamarij the path continued to wind its way upwards across the rugged spurs of the mountains, only to descend later, somewhat precipitously, into another valley. As we reached the top this pass the clanging of bells informed us of the near presence of a caravan. Soon we came upon it, but owing to the narrowness of the path, the roughness of the incline, and the darkness of the night, the passing of it by entailed upon us much trouble. There was just sufficient light to enable us to make out that the caravan was one of travellers and not of merchandise, though many of the animals were loaded with huge burdens that could not have been under 200 lbs. in weight. The men with heavy saddle bags in rear of them bestrode mules, while the women sat in what appeared anything but a comfortable position, jammed into square wooden boxes. Over their heads rose a light framework which was covered over, except in front, with tightly stretched canvas. On either side of the mule was hung one of these queer looking arrangements, and in each box reclined a woman, sometimes with one infant, sometimes with more, whilst in others two or three children were huddled together. It says much for the hardihood of the Persian mule that loaded as he is, and traversing the roads he does, he is able to cover a daily stage of some 10 or 12 miles.

The Indian Government aware of the stamina possessed by these animals, has frequently detailed officers to the country for the purpose of purchasing them. Good prices are given, which although they tend to temporarily raise the value of the animals locally, must really do much to encourage the breeding of a superior class of transport mule.

But to continue our march. When we reached the bottom of the valley a long stretch of undulating country lay before us, and in the starlit darkness our ride became tiresome and monotonous in the extreme. At the slow pace of three miles an hour one does not feel the glow of motion, nor the exhilaration which all quick movement tends to generate, but slowly onward we plodded our weary way, watching the shades of night melt into those of early dawn. At length the sun began to appear over the smaller hill-sides, and gradually to take up his position on the mountain tops, then forsaking these for realms of airy space he rose above us, and ushered in the glories of an eastern day.

We were then nearing the quaint old village of Kazerun, and here I determined to halt a few hours under a clump of date trees which were hard by the road. While my breakfast was being prepared I strolled through the village, and endeavoured ineffectually to change some Persian bank notes I had been given at Bushire. In this attempt I failed, and from what I experienced later I found that, except in the larger cities, the notes of the Imperial Bank of Persia are worth no more than the paper on which they are engraved. The people of the villages have not yet reached that state of civilization in which a promise to pay is deemed as good as the silver coins themselves.

After breakfast I was seated on the ground enjoying that solace of solitude a quiet pipe, when I was accosted in English by a Parsi who hailed from Poona, and who proved to be the owner of the caravan I had passed by on the previous night. He told me that together with

his family and immediate relatives he was making a pilgrimage to Yezd, one of the cradles of his race, and still a great Zoroastrian centre. Hearing from him that this village was noted for its manufacture of native shoes, I asked him to procure me a pair. This he tried to do by sending a shoemaker to me, but I am a big man, and none of his wares proved large enough for a man of my standing, nor on a subsequent visit was he able to provide me with a suitable pair. The shoes for which Kazerun is so justly noted are much prized throughout southern Persia, where they are in general wear. They consist of a hard black sole of flax or hemp, with uppers of coarse white cotton. They are of European shape, though a little more pointed at the toes, and without heels. They are soft and comfortable to wear, and while a Charvadar, or muleteer, is rarely without a pair to fall back upon while ascending the stony Kotals, they are in general use on the tennis courts of our countrymen, who find in them a good and cheap substitute for the expensive European article. So highly did the late Sir Charles MacGregor think of the Kazerun shoes that he advocated their adoption in the infantry regiments of our native army.

Fifteen miles north-east of Kazerun are the ruins of the city of Shapur, once the capital of Persia, rebuilt and founded anew by the Sassanian king whose name it bears. The majority of the sculptures and bas reliefs are generally supposed to commemorate the triumph of king Shapur over the Roman regions, and as works of art, though later in execution, they do not display such fine chiselling, as do the Archaemid ruins of Persepolis.

A two hour's march from Kazerun brought us into the vicinity of the steep rugged sides of the Kotal Doktor. A large tank lay to our right front, but wheeling to the left we crossed a ruinous causeway and entered a wide valley covered with loose stones, and studded with clumps of low jungle wood. Winding through this maze the road led us to the foot of the great hill, up whose side a long thin line denoted the bridle path. The track proved a rough one, and as I had anticipated thoroughly out of repair. Nearing the summit the ascent became extremely steep, and the road took the zig-zag form so well known to all who have travelled in mountainous districts. A few carcasses of dead animals lay along our path, some torn into shreds, and emitting most obnoxious smells, others leaving but their own white bones as monuments to their former existence.

On reaching the summit a good gradual descent through a rich and wooded valley brought us to the base of the Kotal-i-pir-izan, the mightiest of all the passes that lead to the interior. The day was far spent when we reached the foot of the valley, over which towered the great hill, with the caravansera of Mian Kotal perched eyrie-like on the edge of a great precipice near its summit. The upward climb was indeed an arduous one, great masses of rock kept constantly opposing our advance, blocking a path which was littered with stones of all shapes and sizes in profusion. The ascent too was steep, and we had to dismount to ease the tired mules of any unnecessary weight. Worn and weary we at length reached our halting place, and after hammering at

the door for some time, it was slowly opened by a sleepy porter. On passing he salaamed, an honor most unusual, for the Persian in his contact with the Feringhi is far from obsequious, in fact of the two he considers himself the superior creature, and his independent and conceited bearing reminds the traveller very frequently that he is a stranger in a foreign land. My evening meal of a few biscuits and a tin of soup was soon disposed of, and a few minutes later exhausted nature found repose in sleep.

Early next morning I was awakened by the noise caused by a tribe of wandering Hyats, or gypsies, who with their flocks and herds were filing past the caravansera on their way upwards to their summer quarters. On taking to the road later I found that about half the nomads had already passed by, and I involuntarily stopped for a moment to watch the long strings of horses, oxen, sheep, goats, and asses wending their way round the bends in the hill side. It was a picturesque and truly eastern sight. The smaller children with their mothers were seated on mares, the larger hung on, as best they could, to the piles of baggage on the backs of asses and oxen; the young of goats and sheep, together with many fowls, were also carried by the patient kine, while the men, younger women and elder children drove the animals upwards. These gypsies are said to number no less than a fifth of the population of the country. In the winter with their herds and flocks they descend into the plains, in the summer they seek green fields and pastures new, in the solitudes of the mountain.

When we reached the top of the pass, which has an elevation of 7,400 feet, we found ourselves in a region of snow-crowned mountains, and from hence onwards to the confines of the Caspian we were never out of sight of snow-crested peaks. In Persia one is never far from the hills; it is a land of mountain and plain, one vast desert succeeds another, and still the bare hills encompass it, and bound its distant horizon.

On our descent we noticed a large sheet of water to our front, and towards the further end on an offshoot from the hills lay the village of Dasti Arjun. It appeared quite close to us, but in Persia distance is deceptive, and it took us an hour and a half to reach it. As we descended to the plain I felt a feeling of sickness creeping upon me, and as the sun rose higher and higher my head began to ache more and more. The harvest seemed an ever retreating object, and half-hour after half-hour elapsed, and still we appeared to get no nearer to it. Our progress seemed unreal, but the longest lane has a turning and the dearest Persian stage an end, and at length we reached our welcome haven of refuge, the telegraph rest-house. Here thoroughly knocked up, I remained two days, dosing myself from my small medicine chest, which comprised a box of pills, a little quinine a bottle of chlorodyne.

On again taking to the road we passed through an undulating district. Just as darkness was setting in, I noticed a man on the hills to my right, making frantic gesticulations as if to attract my attention. I halted and almost immediately the figure of a European appeared against the sky line. This proved to be a visitor from Persepolis, who

cold, hungry and saddle sore had been wandering in the hills since early dawn. With some difficulty he dismounted from his horse, and after having partaken of some light refreshment which I was enabled to offer him, he told me of his misfortunes, expatiating on his own folly in having lost sight of his supplies for even a moment. Profiting by his example, from that day till I left the country I carried in the wallets of my own saddle, a tin of soup, and a few biscuits.

It was quite dark when crossing a bridge over a small river we entered the caravansera of Chinar Rada which stands on the further bank. On resuming our march early next morning the presence of many travellers on the road seemed to betoken our near approach to a large city. We passed through a rich and fertile country which I had no difficulty in recognising as the far famed plain of Shiraz. Soon in the distance the domes and minarets of the old city arose before us from among groves of many trees.

The very name of Shiraz conjures up visions of rose gardens with long shady alleys and broad green walks. One pictures a city of smiling plenty, placed in a district flowing with milk and honey, one imagines a sort of earthly paradise; an ideal oasis in the bleak deserts of Persia. But it must be owned that the anticipation of one's dreams is far from realized by actual experience in the classic city and its surroundings. The place is in great part a ruin, its former days of grandeur have departed, and the beauty of its environs, has, with the license of oriental exaggeration been too excessively extolled. Nevertheless the famed plain has a loveliness all its own, and the tired traveller, who has for days and days toiled up the rocky ladder of the Kotals, involuntarily thanks his God as he first views the fair landscape presented by this green and fertile district.

Shiraz can boast of no hoary antiquity, indeed it is questionable if the city even existed before the Musalman conquest. Though since then always of importance, at no time has it been remarkable for its splendour. The few buildings that still remain are all the work of Karim Khan Zend, who, towards the close of the past century founded the city anew, embellishing it with mosques and a bazaar, still one of the finest in Persia. Shiraz is situated at an elevation of over 4700 feet above the level of the sea, and the climate is one of the pleasantest in the country.

As in other parts of the country roads are conspicuous by their absence, but rough tracks traverse the plain in all directions. One leads to the last resting place of Saadi, another winds to the quiet tomb where Hafiz sleeps his long last slumber. These walks are much frequented, for both poets are still revered in the city of their birth, and honored throughout the country whose literature they did so much to adorn. When the sun begins to sink and the evening shadows to deepen these garden tombs are favorite resorts of the Shirazis, who in the cool of the evening, and as it were in the presence of the illustrious dead, love to discuss their daily life, or to indulge in learned disputes on greater subjects, and to quote the authoritative line of the poet in support of the particular argument they may have advanced.

Such has been the custom of the Shirazis for generations. Of old their city was known as the *Dar-i-ilm*, or home of science, and still it is renowned for superior learning, while its claim to sanctity is attested by the presence of many mosques and imamzadas. Such being the case it seems strange that the chief, if not sole industry for which the city is now famous should be its trade in wine. In Asia the wine of Shiraz has acquired a name for general excellence second to no other. Its manufacture is chiefly carried on by Armenians and Jews, from the juice of grapes grown in the neighbourhood of the city, and the liquor, besides having a good local sale, is largely exported to other parts of the country, where it is held in high esteem by native connoisseurs.

From Shiraz to the northern confines of the country a postal service has for ages been established. The stages are usually from 20 to 25 miles in length, and at each *chappar-khana* or post house, from 6 to 8 horses are available for the work. The government has the first claim on these animals, but, should they not be requisitioned, a traveller can hire them to carry himself, baggage, and servant to the following stage, at a charge of one *keran* for each horse per *jarsak*. A *shapird*, or post-boy, must also be engaged to bring the horses back to their own stables; he is however a very necessary addition as he acts as guide, and without such aid it would be well nigh impossible to find one's way through the country; in some places tracks converge, in many others they entirely disappear.

In the cool of an evening I left Shiraz accompanied by my servant and a post-boy. The horses of the two latter carried my kit, packed in saddle-bags, which hung down over their flanks. The animals were indifferent, the road lay entirely among the hills, and darkness overtook us long before we reached the post-house of Zarghun. To ride 20 miles in 5 hours was not a good beginning, but so slow a rate of progress is altogether exceptional. A pace of about 7 miles an hour can usually be maintained, but to take anything more than this out of the miserable brutes one has generally to bestride, requires indeed much hardening of the heart. Next morning our road soon left the hills and debouched on a large grassy plain. At the nearer end of this lay a shallow marsh, through which ran a dilapidated causeway about half a mile in length. The ground then rose slightly till we approached the bridge which unites the steep muddy banks of the Kur, or Band Amir river. About 7 miles lower down is the *band*, built by Asad-ud-Dowlab, from which the river takes the name which Moore has rendered classic as the Bend Amcer. After crossing the bridge we were able to quicken our pace, and soon in the distance there arose before us rows of tall stately pillars, stencilled against the dark back-ground of the Koh-i-Rehmat hills. Leaving the road about 3 miles before the post-house is reached we struck off to the right, and following a foot-path soon found ourselves beneath the artificial terrace from which the mighty ruins of Persepolis rise. Situated on this platform of titanic masonry are the massive ruins of no less than six distinct buildings. The edifices themselves are embellished with sculptured reliefs, and the stair-ways by which they are approached, are profusely decorated with scenes and

pictures of ancient life, beautifully chiselled from a rich blue limestone. The colossal fragments that still remain all stand on the raised terrace, and must have comprised the royal palaces and temples only, while of the vast city that lay spread out at its base not a vestige is to be seen. The whole of this neighbourhood abounds with relics of antiquity, consisting chiefly of hill forts and rock-cut temples or tombs, of which perhaps those at Naksh-i-Rustum are best known. To attempt to discuss these ancient monuments is to speculate on a question which has puzzled the savants of the civilized world for two centuries, but that there once existed in the great plains of Merv Dasht the capital of a great and mighty empire is beyond doubt, and that this ancient city was Persepolis, which the Greek Alexander pillaged and burned, may almost now be said to have become an ascertained fact. Interesting as these monuments of antiquity may be, it requires a mind stored with ancient lore to fully appreciate them. For my part, though I could not but admire the Archemid arts, as portrayed in their sculpture and architecture, much of what I saw was un-intelligible, through lack of a previous study of its history. At Persepolis I met an official of the British Museum, who had been sent thither by the authorities to take mouldings of the more important sculptures. He had already filled some five or six cases, and was still hard at work when I met him, but he kindly offered to go over the ruins with me. Unfortunately his knowledge proved extremely limited, for as he explained to me moulding only was the business of his life.

After leaving the ruins we passed through a typical Persian country, a flat plain surrounded by hills, and reached Kawanabad the same evening. Here we spent the night and early next morning were again in the saddle. There was of course no road, and the ground being saturated with water our pace was correspondingly slow. At last we got on to firmer ground, and a good gallop relieved our pent up feelings. We pulled up on the banks of the Polvar river which wound its way through the hills in a pretty defile. On emerging from this pass we entered the plain of Murghab, and were again able to quicken our pace. A fast gallop soon brought us in front of an old, antiquated and massive pyramidal pile, in no way remarkable for its size or architectural features. But judged historically this ancient relic is of the very greatest importance; it has been the subject of controversy for ages, though most modern savants now concur in identifying it as the tomb of Cyrus, the son of Cambyses. Should this conjecture be correct the site of the ancient city of Pasargardae is at the same time fixed, for this celebrated sepulchre was known to be within the royal gardens of that city. The ancient ruins therefore with which the plain is strewn in this neighbourhood undoubtedly mark the site of the Pasargardae of ancient writers.

On reaching the post-house of Murghab we changed horses and set out on a rough and rocky path leading over low hills. Rain soon began to fall and the rumbling of distant thunder seemed to portend a storm. Our horses were of the worst description, so much so that it was impossible to induce the one on which the post-boy was mounted to move

out of a walk, and soon even that pace proved too much for the miserable brute. Unfortunately the stage happened to be a particularly long one, so I prepared for the worst and ordered the *Shagird* to dismount and drive the animal before him. A strong wind had now taken the place of rain, it blew right in our faces, and feeling cold and numb I too dismounted thinking that a walk of a mile or two might tend to warm me. We had not proceeded far however, when the post boy, threatening to strike my horse with the whip approached too near his heels. The animal let out at him with both legs and catching him fair in the stomach sent him rolling down the hill side. There he lay, moaning as if in great pain, and beseeching a compassionate God to have mercy on his miserable condition. I did what I could for him, and after the lapse of about half an hour managed to get him back again into his saddle, when we slowly resumed our march. On reaching the nearest village I got a man to take his place, and leaving the injured *Shagird* in the Caravansera we pushed on at the fastest pace possible.

We were now nearing Dehbid, a miserable village situated on a bleak plateau almost on the crest of the Persian table-land, at an elevation of 7500 feet. The horses were thoroughly done up and could not be forced out of a walk, the wind still continued to sweep across the plain in keen biting blasts, darkness too was fast approaching, and strain our eyes as we might, we could not see the goal for which we were making, the telegraph rest-house. Numb and dejected we plodded wearily onward, till at last it loomed in the distance almost hidden by a clump of reedy willows. By this time our animals were so thoroughly exhausted that compassion compelled us to dismount, and thus to relieve them of perhaps an unnecessary burden. In Persia I had but few unfortunate experiences, so much so that I can look back on that unpleasant afternoon's march of 28 miles, as the most trying hours I spent in the country. Often have I execrated my mounts and the long distances they have had to carry me, but never did I wish the long way shorter with greater fervor than I did that day.

On arriving at the telegraph station the officer in charge afforded me a hearty welcome, and at a well spread table in his companionship I soon forgot my past misfortunes. A roaring fire caused the blood once more to circulate freely through my veins, and our conversation was prolonged far into the watches of the night. My host was a man who had lived long in Persia, and knew much of the country and its people, whose language he spoke with an almost perfect accent. In the intervals of his work he had visited districts, all but unknown to Europeans, and he told me many tales of the manners and customs of the wandering tribes. The liats had already begun to arrive in his neighbourhood, a sure sign that summer was fast approaching even this stronghold of the fabled Boreas; with the advance of the season they arrive in increasing numbers, while at the advent of winter they betake themselves off to warmer climes, there to await the voice of another spring to summon them again to the mountains.

With many thanks for his hospitality I bade adieu to my genial host, and early next morning again set out on my journey northwards.

The sun had not yet risen, and the dreary wilderness as seen in the morning light presented a weird and uncanny appearance. Here and there the dark outline of a hill could be deciphered protruding from the generally level surface of the plain, while at long intervals there flashed will-o-the-wisp-like lights, denoting some encampment of the wandering *Iliahs*. A chilly blast, blowing from the snow-clad hills to the north, so numbed my hands that I could hardly grasp my reins, but as the dawn advanced we forced our horses into a hand gallop, and thus relieved the retarded circulation of our blood. We pulled up on the edge of a steep *ghat* which led down to a vast plain some two hundred feet below. The sun in the meantime had risen, its welcome rays lit up the snow crowned summit of a lofty peak which towered above the hills to our left. The glimmer of the sunshine on the spotless snow, and the lights and shades cast on steep precipices, rocky crags, and serrated cliffs, as seen from different points and in different lights, modifies to a small extent the monotony of the desert. Towards evening signs of considerable cultivation began to appear, for we were now entering the comparatively fertile district of *Abadeh*. The dry mud walls of the town soon arose before us, and passing along its narrow and tortuous streets we reached the telegraph office.

I soon discovered that my host was known as a great physician and that he had a natural bent for medical science. He shewed me his dispensary, replete with medicines, and furnished with numerous surgical instruments, scrupulously clean, and burnished to a marvellous degree of brightness, circumstances had forced on him a knowledge of medicine and with the aid of books and constant practice he had acquired considerable proficiency in the healing arts. In the city of *Abadeh* his fame had got noised abroad, and from the surrounding districts they brought to him the halt, the lame, and the blind, in the vain belief that he had acquired power over all diseases to which flesh is heir. But medical science was not the only art he cultivated, for in his sitting-room I was surprised to find an organ, and soon seated at the instrument he played on it songs of his own country, a land fate had decreed he should forsake, and to which he had now given up all hope of returning, but of which he liked thus to be reminded in the days of his exile.

We had intended to start next morning, but on sending to the post house for horses, were unfortunate enough to discover that the Persian mail had requisitioned all the animals. In the evening, however, three dejected looking steeds were procured, and on these we set out. Our route still lay along the same great plain, and snow capped peaks were still visible in every direction. The same chilly wind continued to numb our hands and faces, and to freeze apparently even the very life blood of our horses. Our rate of progression became slower and slower, but uncomfortable as we were we could not fail to admire the beautiful white lilies with which the plain was covered, till darkness soon denied us even this relaxation.

About noon next day we arrived at *Yezd-i-Khast*, the most curious, and from a little distance, the most picturesque village on our long route. Situated near the middle of a narrow valley was a huge rock

which protruded upward till its summit was nearly level with the steep banks of the defile. At its base, for only a few yards, was the natural rock visible, and then upward and upward rose layer upon layer of mud wall, which finally culminated in the village. Perched high on this isolated rock overlooking the river, this fortress looking hill presented more the appearance of a fort than of a peaceful hamlet. At one extremity the elevation of the rock had been much lessened, and here was placed a gate-way through which only could an entrance be gained to the town. To add to its fortress like appearance a narrow bridge led up to the gate, and the thick mud walls of the place were studded with openings, not unlike embrasures. But these openings were in reality destined for a much more peaceful purpose, as on a nearer approach, it was evident that here conservancy arrangements were extremely primitive, and that anything wanted to be got rid of by the inhabitants, was thrown out of these holes, and without further thought consigned to the force of gravity or the winds of heaven. Jutting out from the walls were numerous small verandahs, so rickety and shaky in appearance that they threatened at any time to fall into the valley some hundred feet below.

Leaving this curious mud-heap we continued our march over the desolate plain which surrounds it. The same treeless hills rose around us, and their barren outline, escarped against the sharp sky-line, served to form a fitting frame for this picture of desolation. We passed by the ruins of several hamlets, and soon left the province of Fars, in which up to this time our march had entirely lain.

As we were nearing the next post-house I made the acquaintance of two Persian gentlemen who had been out shooting. Their bag consisted of only a few pigeon, quail and partridge. On examining their guns I found one was by a well known London maker, and that the other was a clever reproduction of it, which I was told had been manufactured in the capital from the English model. A casual inspection, however at once disclosed the superiority of the English material and workmanship, the weight of the Persian gun for example, being about double that of its original. The shikaris invited me to drink a cup of tea with them, and to this I readily assented. We accordingly adjourned to the post house where samovars and glasses were quickly produced, and soon we were drinking the fragrant herb in much the same manner as an European drinks his wine. Few Persians travel without the utensils necessary in preparing their national beverage, and a samovar is to be found in almost every post-house. The tea is drunk from small wine glasses; it is highly flavored with sugar, but no milk is added. Few Europeans learn to like this drink, although they quickly begin to appreciate the merits of the Russian method, which does not differ very much from the Persian. After tea *kalians*, or pipes, were produced, but smoking is not a pleasure an Oriental can indulge in for more than a few minutes at a time, and bidding my acquaintances good-bye, I again took to the road. Galloping over the plain the walled city of Kum-i-shah was quickly reached and here we spent the night. Next morning on resuming our march we were surprised at the

signs of a universal commotion. The city was already astir, its inhabitants were flocking towards the Isfahan gate, of whose portals the beggars had already taken possession, and were loud in their application for alms. Pushing our way through this motley crowd we with difficulty got ahead of the long procession, only to meet another coming from the opposite direction. Strings of carriages, horses, mules and ponies continued to file past us; at length there appeared an opening in the line along which moved a brougham, drawn by six handsome little horses. Ere this I had ascertained that the excitement was due to the anticipated arrival of the new governor of Shiraz, who was expected to pass through the city en route to his new province. On his approach I raised my *solah topi*, he returned my salutation, and dispatched a mounted orderly to enquire whence I came, whither I was going, and at the same time to express a hope that my journey onward might be a prosperous one. I thanked the prince for his solicitude, and informed him that my experiences in his new satrapy had been most agreeable. Throughout the stage, which was one of 20 miles, the track was never clear of baggage animals. I was told subsequently that in this caravan there were no less than 15 private carriages and four hundred beasts of burden, with a train of *charvadars*, and retainers on a corresponding scale, and this I considered little, if any, exaggeration.

A hilly country had to be crossed before we arrived in the valley of the Zend-i-Rud, and the road through it was rough and rugged. But on gaining the crest of the Koh-i Sufi ridge a glorious view of the ancient capital rewarded us for past discomfort.

"I saw from out the haze her structures rise

As from the stroke of the enchanter's wand."

The winding Zend-i-Rud seemed to hold in tender embrace a tract of lovely country, and the city, situated in the centre of a huge garden offered a fair prospect as seen through the misty rays of the setting sun. Embosomed in orchards and much cultivation, its mosques, palaces and caravanseras, presented a most imposing and picturesque appearance. All seemed noble that met the eye, though a nearer approach dispelled this favorable illusion, and disclosed the fact that time had not dealt kindly with the imperial city of Shah Abbas.

Like other Persian towns the greater part is now in ruins, some grand in their decay, others vestiges of what they have been. Its grand old bridges still span the Zend-i-Rud, and the great thirty-three-arched monument of Ali Verdi Khan still defies the attacks of nature, the fine avenue of plane trees still leads from hence almost to the centre of the city, but the leafy glade is now full of gaps, and the waters of its stone canals and little lakes, have long since disappeared. The Maidan-i Shah, the great square laid out by Shah Abbas, still stands in all its ancient splendour, but deserted well nigh by all trace of life, while the great dome that looks down upon it from its further end, bereft of many of its exquisite tiles, is now fast crumbling away in decay. The glory has departed from the Madrassah or college, and the palace of Haft Dast is now in ruins. The Zili-Sultan, himself but a shadow of the past, still carries on his government, from the home of the great Sufi king, but

his princely court is small, and his revenues are only those of a single province. How are the mighty fallen ; a few years ago he was Governor of two-fifths of Persia, with an almost independent army of his own, at the present time he is governor of only a single district. Yesterday he was hailed as the future king, to-day he is reckoned as not the greatest of Persian subjects.

To a European the Armenian suburb of Julfa must be of particular interest. It owes its origin to the great Shah Abbas of glorious memory who perceiving it was necessary to the welfare of his capital that men of industrious taste and commercial instincts should reside under the shadow of its walls, arbitrarily transferred the population of the Armenian village of Julfa from the banks of the Araxes, and set it down outside the gates of his own capital, in a new city which he called Julfa after their own old home. The churches and tree-shaded alleys of this exotic town have been often described, and of its inhabitants themselves much has been written, but unfortunately they seem to be as much despised by the European traveller as they are by their Persian masters. That they are not what they should be, is of course natural, but I do not think they deserve all the hard things said of them. Many are industrious and enterprising, and seem to influence their children for good, for now-a-days although their sons go forth to seek their fortunes in distant lands, they seldom forget their country or their people, and testify to their regard for the place of their birth, and the religion of their youth, by contributing largely to the support of their parents, the establishment of schools, and the maintenance of the ancient priesthood in their own old home.

The European society of Ispahan is naturally extremely limited, consisting as it does of some fifteen members. Life in the old city is cast very much on Indian lines ; in this respect it differs from Teheran, where a semi-French existence is eked out by English sport. A British consulate had lately been established at Ispahan, and it was there I was fortunate enough to put up. The consul is a man who knows Persia, its language, and its people well, having spent some 25 years of his life in the country. Already I believe his appointment has been productive of good, and in opening out the district to English commerce, his personal influence, tact, and thorough knowledge of the character of the people, will be of the greatest advantage to our Imperial interests.

It was with regret that I had to bid him good-bye, and once more take the northern road. Sharply at the appointed time the horses appeared at the door, an incidence most unusual, for the native has not our military idea of punctuality. The weather was pleasant, the horses were good, the road was level, and the ride to Murcheh-Khurt proved most enjoyable. We passed by rows and rows of low circular mounds, resembling nothing more than huge ant-heaps. These mark the course of *Kanats*, or artificial underground streams, and it is upon this system that the little irrigation practised in Persia is conducted. A spring is tapped on a hill side, and here the first well is dug, other shafts are sunk at varying intervals, on lower ground, in the alignment of the projected channel, and these are subsequently connected by under-

ground tunnelling, the excavated earth being drawn up and placed round the original opening. In this manner the stream is gradually led to the surface and then diverted as it may be required. In so dry and thirsty a land water is the veritable giver of life, and many a bleak desert only requires to be irrigated to blossom forth into a smiling garden. Much might be done, but the Government is lax in its duties, and considers it has accomplished the object of its existence when it has collected its revenues. This apathy is much to be regretted, but unfortunately signs of it are only too conspicuous, caravanserais crumble to ruins, bridges are undermined by rivers, roads are carried away by floods, causeways subside below the level of the marsh, while nothing is done to check the progress of so general a decay.

In nearing Marcheh Khurt we passed over that part of the plain, where some hundred years ago was fought the decisive battle which delivered Persia from the Afghan yoke, and established in its stead the infamous sovereignty of Nadir Shah. From this village to Kashan there are two routes; the more direct and interesting is that *viâ* the Khurud Pass, where it rises to an elevation of 7000 ft.; the longer, however, is that adopted by the post, as it possesses the double advantage of being comparatively level, and of remaining open for traffic throughout the year. It was along this latter road of course that my route lay. A long stage of 35 miles brought us to Turg, a village pleasantly situated in a fertile valley, over which towers a lofty snow-crowned mountain, in the lower crevasses of which were still visible many patches of snow. The hamlet, perched on a huge boulder of rock, presented a curious appearance. The post-house too was peculiar, consisting as it did of only two mud built and dome roofed passages. In central Persia wood is scarce, and particularly so in this district, for I did not notice a beam or twing of timber brought into use in the construction of either this, or the following post-house.

A bleak desert, with, small patches of cultivation scattered over its surface at long intervals, stretches right up to the walls of Kashan on the side by which we approached them. If, however, the alternate route over the Khurud pass be taken, before reaching the town, a more fertile district is traversed, which produces fruits of many kinds, pears, melons, pomegranates, figs and dates. The modern city is devoid of interest; except the bazaars there is practically nothing to be seen. Its silks and brass and copper work are the only industries for which this once flourishing place is now known. On the further side of the city there is a considerable amount of cultivation, but it disappears long before we reach Sin-sin, a small village situated at the extremity of a salt marsh. From thence the road winds through the hills for a few miles, and later emerges on the usual long and dreary plain. Pushing onward the gilded dome of the shrine of Fatima soon became distinguishable, flashing in the rays of a brilliant sun, but it was long ere we reached it for the deceptiveness of Persian distances is proverbial. The city as usual is approached through acres of mud ruins; on the more elevated of these many storks have built their nests, and there they continued to remain, although we passed right under their curious looking

homes. It is evident they are regarded as sacred by the inhabitants, and that they even impress the children with a certain amount of reverence.

Although Kerbela is the chief place of pilgrimage to the Shiah world, in Persia there are many local shrines to which it is considered the duty of the pious to resort. The chief of these is Mashad, the place of martyrdom, for there are interred the remains of Imam Reza, the eighth of the twelve most holy prophets. It was when proceeding thither to pay him a visit that the saintly Fatima sickened and died at Kum, and here she has been buried. It is almost entirely to this shrine that the city owes its importance, for in Persia, as in other countries, religion and trade go hand in hand, holy days become holidays, and religious feasts commercial fairs. Hither repair many caravans of corpses, for to be buried near the canonized Fatima is to ensure an entrance into the joys of Paradise. As we passed through the city, crossed the bridge, and got on to the new road that leads to Teheran, we had occasion to note the manner in which the corpses are transported to this famous campo santo. A caravan may consist of some six or seven mules, some of the animals will carry four dead bodies, two slung on either side, others will bear but two, one on either side, while the smaller mules are limited to one, which is balanced at right angles to their backs. The outlines of the ghastly figures, enshrouded in a coarse white cloth, are almost always apparent, and the effluvium emitted from many decomposed bodies is at times excessive, as corpses are occasionally brought hither from the remotest limits of the kingdom.

After leaving Kum the road is level for the first 20 miles, it then rises to higher ground which overlooks a large salt lake. Here was encamped a caravan of merchants, and around them, in place of the common mule, scores of stately hill camels, with long and shaggy manes, were pasturing on the bleak hill sides; he is a grand and majestic animal, and I could not help stopping to admire his slow, but almost regal gait. The origin of the lakes illustrates a curious phase of official life in Persia. A new road to Kum had been constructed by a court favorite, but the caravans still continued to use the old track, which ran across the depression in which the present lake now lies. To force traffic on to the road, a dam on a river was breached, and the waters of the stream no longer restrained, sought the hollow now occupied by this sheet of water.

On leaving this dreary scene we struck again into the hills, and made for the guest-house of Aliabad. Here we put up for the night, and on leaving next morning gave the keeper a couple of *kerans* for allowing us the use of a room. These he indignantly refused, but on my causing him to understand, that should he not want the money there was the alternative of returning it, he sulkily pocketed the money. This was by no means my only experience of the greed of the natives; all along the postal route I found that to offer even the meanest of them less than a *keran* was only to insult him; of an Englishman much is expected, and we have already established a reputation in Persia for lavish bounty, similar to that which we have enjoyed in Europe since the days of the Grand Tour.

We were now nearing the capital, and the road thither passed through the famous Valley of the Angel of Death. I had seen many stretches of flat plain but nothing so absolutely unproductive and sterile as the long deserts I passed through that day. But there is something grand in nature even in her sterner moods, and on me that dreary landscape, that dismal solitude, and that sandy waste has left an impression as enduring as that produced by the lovely view of Ispahan as seen from the Koh-i Sufi ridge.

At length we got clear of the valley and rising to the crest of a low chain of hills caught sight of the happy capital in the distance. In front of us glittered the gilded dome of the shrine of Shah Abdul Azim, and the level road could be traced through the plain, right onward to the city wall. Unfortunately rain soon began to fall, and in a few minutes horses and riders were thoroughly drenched. We could not take advantage of the little railway that runs from the mosque-tomb to its station inside the city walls, nor of the tramway which leads from thence to every quarter of the city, but, plodding our way past the sacred shrine, we entered a long avenue of trees which led right up to the tiled arch of the city gateway.

Hardby are the ruins of Rhé, which antiquarians identify as the site of the ancient Rhages, "mythically narrated to have been founded by the patriarch Seth, and associated with the names of the Apocryphic Tobias, the Greek Alexander, and the Kaliph Harun-al-Raschid." Once the illustrious centre of the richest empire of the east, it was laid waste and devastated by that scourge of civilization Jhengis Khan, who after deluging Balkh, Bokhara and Samarkand with the blood of their inhabitants burst through the passes of Khorassan and devastated and laid waste this famous city.

We at length entered the capital, and wending our way through miles of covered-in bazaar at last found ourselves at the house of my host, the Assistant Director of the Telegraph Department, in the European quarter of the city. The foreign population of Teheran is said to number 400, and the part of the town in which they live is a product of that western civilization which is making so slow, but steady progress, throughout the land. On both sides of the main street are planted rows of trees, and at both sides are paths for the convenience of pedestrians; lampposts too are much in evidence, and in places the road has been macadamized. Here are located most of the legations, including that of Great Britain, which, pleasantly situated in a beautiful walled garden, is an eminently suitable abode for the representative of a country which has so large an interest in the future of the Shah's dominions.

The modern capital is much more the creation of the present king than of any of his predecessors, it consequently lacks the interesting associations that hover around old age, and absence of these is not compensated for by the presence of conveniences which modern progress demands. There are no great public works or buildings of any kind, in fact I have never seen so large a city so bereft of architectural adornment. The beauty of Teheran lies in its near proximity to the Shimiran hills, a great offshoot from the Elburz range, and the crowning glory of the

place is the mighty peak of Damavend, which though forty miles away seems to dominate every quarter of the city

The armed strength of the country centres in the capital, and is of course of especial interest to our officers of the Indian Service. From what I actually saw, and from the little information I was able to acquire about the army, I came to the conclusion it was much on a par with the local lives of an Indian Native State. Soldiers arranged in a costume designed on the European model are conspicuous in every part of the town. To each European establishment three or four are attached, but should the householder wish them to remain he must give them a small monthly wage. There are no regular barracks or lines, and as a rule men and horses find lodging where they can in any quarter of the town. Discipline is at a low ebb, and smartness is unknown. In the provincial towns especially is this noticeable, at Bushire the men were bare-footed and in rags; in Shiraz they were clothed, but like Joseph of old, in coats of many colors; in Dehbid I met a company of them who had come from the old city to await the arrival of the new Governor, and to escort him from hence to his capital. On hearing of their approach most of the villagers had fled, concealing the greater part of their possessions, and leaving the more valuable in charge of the telegraph official. Whatever the soldiers could lay hands on they seized, and appropriated to their own uses, while the few terrified peasants who remained complained bitterly to the English official, and besought him to grant them the mysterious protection of his telegraph wire. The Persian warrior has, however, this advantage that his time and labour can be secured by the private individual, should he offer him a sufficient wage, and this great army of coolies, under competent control, may yet work wonders in a future Public Works Department, but as fighting men they are useless. Englishmen, Frenchmen, Germans and Austrians have successively been engaged for their regeneration, but all have been disgusted at the treatment they have received at the hands of the Government, and have abandoned an almost hopeless task. In some few regiments Russian officers have now taken their place, and though these continue to command the crack corps at the capital, they do so I take it, chiefly from political motives. The nominal peace establishment I was told is about 24,000 men, and in time of war about double that number could be called to the colours, but the whole system of Persian administration is faulty, and its glaring defects are particularly apparent in its military department.

From Teheran to Kazvin there is a state road, which though thoroughly out of repair, can be made use of by a certain class of carriage. We had been recommended to make the journey in a tarantass, which description of conveyance, if leaving much to be desired in the way of comfort, has at all events the advantage of being strongly and substantially built. It has no springs to break and no unnecessary fittings to give way, while the harness by which the horses are yoked to this huge box-like vehicle, is of the simplest description. In a tarantass we accordingly set out, a great level plain stretched in front of us, and after fifteen hours of incessant jolting we at length reached our destination.

The town of Kazvin is of considerable importance. Situated about 100 miles from the capital, at the point where the roads to Tabriz and Resht converge, it shares in the trade of all three cities. Its large and imposing *m'men-khana*, or guest-house, is perhaps the finest in Persia, but this is the one sight of the place.

Only the great Elburz range now separated us from the shores of the Caspian, and again we had to take to the saddle, for the mountain paths are rough and narrow, and the mountain torrents are not always bridged. Scarcely had we started when a slight shower of rain began to fall, but the sky soon cleared, and we prematurely congratulated ourselves on having escaped a wetting. As we were nearing the post house of Megrâh, however, a perfect storm of hail descended and thoroughly soaked us before we could gain the shelter of its gates. Here through stress of weather we were compelled to remain for the next two hours, and at the end of that time though it was apparent that the storm had only temporarily abated, we decided to continue our march over the mountains. To delay was practically impossible, as we had barely allowed ourselves time to catch the Russian mail boat on the Caspian, and a halt of a few hours at Megrâh might necessitate our passing a miserable week at Enzeli. As we were nearing the highest point of the Kharzan pass, and were marching along a narrow cleft in the mountain, the storm in all its fury overtook us. Misty vapours at first enveloped the mountain tops, but the wind rising, these were driven down to the lower valleys. Thunder began to reverberate through the hills, rain began to descend in torrents, and the wind, which had steadily increased to a hurricane, now drove before it sheets of icy hail that beat up against our hands and faces and numbed our every limb. It was impossible to advance, our horses wheeled about and refused to face the fury of the elements, nor were we able to compel their obedience. Drenched to our skins, if not to our very bones, silent we remained on the bleak mountain pass, wondering if the flood-gates of heaven could have burst their barriers, and their pent up waters, long restrained, could be pouring themselves down in another deluge.

Gradually the tempest seemed to be exhausting itself, and at last we were able to make our onward move. We were now at an elevation of 7,000 ft., a long and difficult descent lay before us, over a district that had been deluged with water for the past week. After passing the village of Kharzan the landscape that lay spread out to view was indeed one of Alpine grandeur, a land of forest and of flood, a land of emerald greenness and luxuriant vegetation surrounded us, and stretched away in the distance as far as the eye could reach. Here every valley gives birth to a rivalet and every hill contributes a rill to swell its volume. The mountain slopes are clothed with trees and the ground is decked in comely green.

The change though sudden is easily accounted for, as the high hills over which we had just passed, intercept the rain-bearing clouds from the Caspian, and cause them to precipitate their moisture ere they leave them for the bleak Persian plateau. It is not without a feeling of regret that we say good-bye to the old country we now know so well and enter this new and totally different world.

A long descent brought us to the bed of the main valley, and, as darkness was closing around us, we forded the stream and entered the post-house of Vauchenar, which stands upon its further banks. Next morning we continued to follow this stream till it united its waters with those of the Sefid Rud. The river was in flood, its muddy waters swept through the narrow valley with a roar, lashing as if in fury the base of the great hills which confine its channel within such narrow limits. Our path lay along the great valley of the river: now it ascends high above its waters, now it descends again to their level, anon it is a bluff cliff that rising abruptly from the river bed forces the path in an upward direction, now it is a tributary stream whose valley, deeply scarped into the mountain side, causes the road to lead downwards. At one such point no trace of the track could be discovered, for the tributary, dammed back by the force of the main current, had completely flooded its valley. But a crossing had to be effected, and after trying point after point for a long time to no purpose, we at length succeeded in discovering a ford, and, cautiously wading through the water, reached the further bank in safety. Our troubles, however, were not yet over, for about a couple of miles lower down a somewhat similar obstruction again impeded our advance. Here the track had descended to the plains, and the narrow valley of the river had broadened out into its wide delta. At this point no trace of our path could be discovered, all was one great sea of mud from which a primeval forest shut out the last rays of a setting sun. Trees torn up from their roots were scattered around, and great logs of timber laid half buried in the slimy mud. The post-boy seemed to wander aimlessly through this maze, letting his horse plant its feet wherever he could discover hard ground: the poor brute floundered about up to his hocks in mud, and at every few steps forward halted a moment for breath. Just as the darkness of night was threatening to envelop us we noticed a long line of clearing in the forest and making for this opening, found that a good level road stretched along it. The horses tired though they were, took a new lease of life, and in the darkness of night we entered the town of Resht.

The position of this place as the great maritime outlet of the northern provinces of the empire, and terminus of the chief road to the capital, has made it an object of considerable attention on the part of Russia. In the earlier years of the eighteenth century the Muscovites had actually occupied this neighbourhood, but the climate proved unhealthy, and so unsuited to their garrisons, that they eventually were compelled to abandon it. The plague of 1834 which decimated the northern provinces, cost Resht many of its inhabitants, and almost totally destroyed its once famous trade in silk. This industry has long been on the decline, but the great increase in the general commerce of the maritime provinces has to some extent compensated the town for its loss. During the Russian occupation large belts of forest were cleared away, but much of this has again taken root, and the sight of red tiled cottages with their gardens and hedge-rows peering out from openings in the wood make a pretty feature of the place.

From Resht an excellent road leads to Peri Bazaar, and when driving along it in a Victoria I felt I had practically left the Shah's dominions. Embarking at the latter place in a small boat we were towed down a narrow ditch-like stream which debouched on the Mard Ab, or still waters of a large shallow lagoon. Here spreading our sail to a gentle breeze we sped across its placid surface, and lowered our sail in the haven of Enzeli on the shores of the mighty Caspian.

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A RETREAT FROM INDIA.

A Lecture delivered by Colonel HOLDICH, R. E., in the United Service Institution of India, on 7th June 1894.

Early Indian history may be said to be contained in a large book in which there is a curious intermixture of blank pages, of historical facts buried so deep under a load of mythological legend as to be beyond the reach of any but advanced Sanscrit scholars, and of very creditable and readable history, graphically and truthfully told, the style of which might well serve in some respects as a model to modern historians. The legends are Sanscrit, the history is Greek, and the blank pages occur at uncertain intervals, and are nowhere so blank as immediately preceding and after the most trustworthy history.

The history of Alexander's exploits as told by several Greek historians are those which stand out in clearest contrast to the myths of the earliest Sanscrit writings, or to the scholarly, though as yet incomplete, compilations derived from archæological or numismatic sources, which fill up uncertain intervals on the blank pages which occur between the records of Greek and Arab conquests.

It is to the Greek story that I now propose to call your attention, and it is Alexander's retreat from India that I propose to follow through districts once classical, but now almost forgotten, although they still teem with records of a close and most important influence over the destinies of India.

Although several Greek historians have concerned themselves with Alexander's career, it is mainly to one of them (Arrian) that for simplicity's sake I shall refer; and though many able scholarly writers in modern times have traced out his remarkable story with more or less precision through the phases of his advance into India and his conquests on the Indus, none of them have been able to account satisfactorily for the details given by Arrian of his retreat from India to Persia for want of accurate geographical knowledge of the country he passed through.

Several rather complicated problems in connection with that historic retreat have been unriddled in the course of surveying Makran, and much which it has been very difficult to reconcile to the general reputation for truthfulness of Arrian's history, only requires a little patient examination into the inevitable physical changes of conformation which the north-western coast of India has undergone during twenty-two centuries to become explicable on fairly reasonable grounds.

We need not trouble ourselves now about the ethnographical features of Makran and southern Baluchistan, though probably no corner of Asia presents such a focus of interest to the ethnographer as does this meeting place of almost all the representative races of the world. Aryan, Semitic, Dravidian or Turanian, Ethiopian and pure Negro, types of them all may here be found in close juxta-position, and be studied here individually. These countries were well enough known

to the Greeks. Herodotus writes of them 150 years before Alexander's time, including them in the 14th and 17th Satrapies of the Persian Empire, and he mentions tribes by name whose descendants may be traced under almost their old designations even to this very day. Alexander pioneered the Greeks into India, but they were at the gates of India before him; and those who have studied the manner of his entrance into the country have good grounds for a conjecture that he selected an apparently haphazard route because it carried him, at least on the far side of the Hindu Kush and across the Kaoshan pass, within reach of Kyrenian settlements in Bactria.

But whilst we need not trouble ourselves with more than Arrian tells us of the people occupying the line of Alexander's retreat to Persia, we must give a little attention to such changes in land and coast configuration as we have been able to trace by the ordinary processes of surveying, without claiming any specially scientific basis of examination.

The difficulty of restoring to the map of India an outline of the ancient geography of Sind and the Indus delta is one which has baffled many generations of scholars. The vagaries of the river Indus, even within the limits of historic record, once flowing in a channel to the Rann of Katch, with a possible branch to the Bay of Cambay; at another time cutting its way under the frontier hills far to the west of Jacobabad; and anon splitting the limestone ridges at Sukkur, with the very probable assistance of an earthquake, and taking to itself a new channel altogether; circling the walls of great cities like Hyderabad at one time, and suddenly leaving them stranded and dry, renders this river, even before the delta is reached, a hopeless feature for reference with regard to the position of places said once to have been near its banks. Within the limits of the delta the confusion of hydrography becomes even more confounded, and until we possess a trustworthy map of the Indus riverain which will include some at least of the old delta channels, we must remain in the dark as to the real position of those branches of the river which Alexander explored from Patala, and of the shape and nature of those islands which were then accumulating to form the future delta. I shall follow General Haig's pamphlet in this part of my subject, believing him to have had the best opportunities for observing, as he has also the highest reputation for accuracy in recording his observations.

But when we pass beyond the limits of the plains of Sind and the Indus delta, westward, so long as we travel inland, there is not the same difficulty in deciphering ancient and mediæval geography. From Alexander's days till now the "everlasting hills" have preserved their general conformation. Within these hills can we but identify certain obligatory points and the beginnings of a route, we can only follow along recognised lines which have never shifted. We can trace Alexander's route with certainty if we can but identify some few land marks here and there. But it must be remembered that the Greek army which retreated from India did not all follow Alexander. The heavy baggage and the elephants, under the command of Craterus followed an inland route from Sind to Kirman about which we are told very little indeed.

Another division of the Greek army under Nearkos was conveyed on ships by the coast line to Persia and the Euphrates, and about this voyage we are told much more than about Alexander's own movements. In spite, however, of the meagreness of information concerning the route taken by Craterus we can infer a great deal on the negative evidence that it was impossible for him to move heavy baggage or elephants except on certain lines: and again, in spite of the almost minute details with which we are favored by Arrian about the ever memorable voyage of Nearkos, we find very great difficulty in identifying the exact ports, harbours, and coasting stations which he visited on account of the shifting configuration of the coast line; not that the changes which have occurred on the coast line between Karachi and Persia are at all comparable to the remarkable transformation which has overtaken the Indus delta, but there are nevertheless many marked changes, especially on that part of the coast which is most subject to monsoon influences. Islands have disappeared wholesale in some parts; they are in the process of disappearing in others; here the coast has gained on the sea, whilst there the sea has appreciably deepened its soundings and lapped up the shore. On the whole, in spite of submerged islands the land has gained on the sea. Apart from the Indus delta which has consolidated and pushed out seaward to an extent which I believe to be greater than General Haig estimates, there has been immense land growth north of Karachi. There may have been sea growth too, but of that I am not so certain. At Karachi itself the port engineers will tell you of the difficulty that exists in keeping the harbor open; were artificial means of deepening the bar to be abandoned, four or five years would end Karachi as an open port. Even now it is possible at low tide to walk out to the well known Oyster rocks, once outside the harbour, and the recent lengthening of the pier opposite Clifton is quite practical testimony enough to the rapidity of shore growth at that point of the coast. I have reason to think that immediately north of Karachi the sea extended at no distant date far up the bed of the Liari stream. Following the coast westwards to Cape Monze there is probably little change in the last 2000 years till we round that cape. Thence it is impossible to say what may have happened as far as the coast indentation at Bidok Lak. At any rate from Bidok Lak northwards there is a wide tract of very recent shore formation along which the road to Bela runs. But clearly no such road existed as late as the tenth century A. D. Sonmiani marks a sort of cul-de-sac for all monsoon currents. All about here they have worked up vast deposits of sand which gradually, under the action of the S. W. wind, have assumed the form of dunes, and have consolidated themselves along the coast lines with the assistance of a scanty saline vegetation, into a natural *band* or protection seawards. Only within the last few years the fishing town of Sonmiani has retired from the coast. It is now impossible to approach that place except on the top of an exceptionally high tide. It is true that this is not due entirely to monsoon deposits of sand. About four years ago very heavy floods turned the local river, the Vindar, into a raging mud torrent, and at once there were mud deposits enough spread out in front of Sonmian to reduce navigation to a matter of approach in shallow "dugouts.

Twelve miles north of Sonmiani is a large depression (slightly under sea level) known as 'Sirondda' which is usually a fresh water lake, but is occasionally quite dry. This was at no very distant date a commodious harbour, or arm of the sea, which has extended north in historic times at least as far as Liari and possibly further. South-west of Liari some of the land formation is probably very ancient as we shall see. Westwards along the Makran coast there are many indications of local changes, some of which will be noticed as we follow the course of Nearkos in his Indus built ships. Enough has been said to justify some deviation from the track followed hitherto by Oriental scholars in tracing out the route of this memorable retreat.

About the beginning of September 326 B. C. Alexander left Patala with a part of his army to push his way through the country of the Arabii and the Oritæ to Gadrosia (or Makran) and Persia. The Arabii occupied the country between Karachi and the Purali—or river of Lus Bela; and the Oritæ and Gadrosii apparently combined with other tribes to hold the country that lay beyond the Purali—or Arabius. He had previously done all that a good general can do to ensure the success of his movements by personally reconnoitring all the approaches to the sea by the various branches of the Indus; by pacifying the people and consolidating his sovereignty at Patala so as to leave a strong position behind him entirely subject to Greek authority, and by dividing his force so as to utilize the various arms with the best possible effect. This force was comprised in three divisions, one under Crateras included the heavy transport and invalids, and this was despatched to Persia by a route which was evidently nearly as well known in that day as it is at present. It is never contended by any historian that Alexander did not know his way out of India. On the contrary Arrian distinctly insinuates that it was the perversity of pride the "ambition to be doing something new and astonishing" which "prevailed over all his scruples" and decided him to send his crank Indus built galleys to the Euphrates by sea, and himself to prove that such an army led by "such a general" could force a passage through the Makran wilderness where the only previous records were those of disaster. He had heard that Cyrus and Semiramis had failed, and that decided him to make the attempt.

We can follow Craterus no further than to point out that his route was probably by the Mulla (and not the Bolan) pass to Kalat and Quetta. Thence he must have taken the Kandahar route to the Helmund, and following that river down to the fertile and well populated plains of lower Sistan (or Drangia) he crossed the Kirman desert by a well known modern caravan route, and joined Alexander at or near Kirman; for Alexander was "on his way to Karmania" at the time that Craterus joined him and not at Pura (the capital of the Gadrosii) as suggested by St. John. One interesting little relic of this march was dug up by Captain Mackenzie, R. E., during the construction of the fort on the Miri at Quetta. A small bronze figure of Hercules was brought to light, and it now rests in the Asiatic Society's museum at Calcutta, in testimony of the fact that some part of the heavy baggage was found too heavy for transport.

Alexander, as we have said, left Patala about the beginning of September. But where was Patala? This problem I leave to General Haig and to Mr. James the present Commissioner of Sind, to decide. Probably it was neither Hyderabad (as suggested by General Cunningham) nor Thata as upheld by other authorities, but about 30 miles S. E. of the former and 60 miles E. N. E. of the latter, in which locality indeed there are ruins enough to satisfy any theory. From Patala we are told by Arrian that he marched with a sufficient force to the Arabius; and that is all. But from Quintus Curtius we learn that it was nine marches to Krokala (a point easier of identification than most from the preservation of the name) and five marches thence to the Arabius. He started in cool moonsoon weather. His route after leaving Krokala is determined by the natural features of the country, as then existing. There was, as I have already stated, no shore route in these days. Alexander followed the old mediæval route which connected Makran with Sind in the days of Arab ascendancy, a route that has been used as a highway into India for nearly eight centuries. It is not the route which now connects Karachi and Lus Bela, but as it belongs to a later mediæval phase of history, and is not unimportant now, I will say no more about it than Arrian says. I have already pointed out that the sea extended at least to Liari, in the basin of the Purali, or Arabius, and we are therefore obliged to locate the position of his crossing that river as being not far south of Bela; where in Alexander's time it was "neither wide nor deep" and in these days is almost entirely absorbed in irrigation. This does not, I admit, altogether tally with the five marches of Quintus Curtius. It would amount to over a hundred miles of marching, some of which would be heavy, though not very much of it; but the discrepancy is not a serious one. The Arabius may have been far to the east of its present channel—indeed there are old channels which indicate that it was so, and it does not follow that the river was crossed at the point at which it was struck. The reason for placing this crossing so far north is that room is required for subsequent operations. After crossing we are told that Alexander "turned to his left towards the sea" (from which he was evidently distant some space) and with a picked force he made a sudden descent on the Oritæ. He marched one night only through desert country and in the morning came to a well inhabited district. Pushing on with cavalry only he defeated the Oritæ, and then later joining hands with the rest of his forces he penetrated to their capital city. For these operations he must necessarily have been hedged in between the Purali and the Hala range, which he clearly had not crossed as yet. Now we are expressly told by Arrian that the capital city of the Oritæ was but a village that did duty for the capital, and that the name of it was Rambakia. The care of it was committed to Hephæstion, that he might colonise it after the fashion of the Greeks. But we find that Hephæstion certainly did not stay long there—and could only have left the native village as he found it, with no very extensive improvements. It would be most interesting to decide the position of Rambakia. What we want to find is an ancient site, somewhere approaching the sea coast, say thirty or forty miles from the

true Raiputs, and their home has been in the country from time immemorial. But though they are not Kushites I agree with Bellw that they were Gadrōsī, the Gadrōsī of Alexander's days. They hold themselves somewhat distinct from other Lunri clans, and it almost appears as if they had once been powerful enough to give their name to the whole district of Gadrōsia, as described by Arrian. I offer these suggestions with all humility to ethnographers, but it really looks as if we might go further for the Gadrōsī and fare worse. I should like to say a word about the Arabī and the river Arabīus, but time is short, and I can only just mention that north of Bela on the Purāli river we have found the remains of a stone built city so clearly allied to the "ghorbastas" of Makran and Sind, and the Mashona relics of Zimbabwe, that we may at least be allowed to conjecture that this country between the Purāli and Kanachi was actually once held by Arabs in those far off pre-Mahomedan days when the Arabs were the master builders of the eastern world.

Immediately after defeating the Oritæ (who apparently made little resistance) Alexander appointed Leonnatus with a picked force to support the new Governor of Rambakia (Hephestion having rejoined the army) and left him to make arrangements for victualling the fleet when it arrived, whilst he pushed on through desert country into the territory of the Gadrōsī by "a road very dangerous," and drawing down towards the coast. He must then have followed the valley of the Phur to the coast, and pushed on along the track of the modern telegraph line till he reached the neighbourhood of the Hingol river. We are indebted to Aristobolus for an account of this tract in Alexander's time. It was here that the Phœnician followers of the army gathered their myrrh from the tamarisk trees—here is described the mangrove swamps in most graphic terms; and the euphorbias, which still dot the plains with their impenetrable clumps of prickly "shoots or stems, so thick set that if a horseman should happen to be entangled therewith he would sooner be pulled off his horse than freed from the stem" as Aristobolus tells us. Here too were found the roots of spikenard so precious to the greedy Phœnician followers. These same products formed part of the coast trade in the days when the *Periplus* was written, four hundred years later, though there is little demand for them now. It was somewhere near the Hingol river that Alexander made a considerable halt to collect food and supplies for his fleet. His exertions and his want of success are all fully described by Arrian, as well as the rude class of fishing villages inhabited by Ikthyophagi, all the latter of which might well be cut out of the pages of Greek history and entered in a survey report as modern narrative. After this we have but slight indications in Arrian's history of Alexander's route to Pura, the capital of Gadrōsia. Three chapters are full of most graphic and lively descriptions of the difficulties and horrors of that march. We only hear that he reached Pura sixty days after leaving the country of the Oritæ, and there is no record of the number of troops that survived. Luckily however the log kept by the admiral of the fleet, Nearkos, comes to our assistance here, and though it is still Arrian's history, it is Nearkos who speaks. We must now turn back to

crossing of the Purali, in a district that might once have been cultivated and populous. We have found two such sites—one now called Khair-kot to the N. W. of Liari commanding the Hala pass, and another called Kotawari south west of Liari, and very near the sea. The latter has but recently been uncovered from the sand, but an existing mud wall, and its position on the coast indicate that it is not old enough for our purpose. The other, Khair-kot, is an undoubted relic of mediæval Arab supremacy. It is the Kambali of Edrisi on the high road from Armail (now Bela) to the great Sind port of Debal, and the tale of it belongs to another history. Nevertheless Khair-kot is exactly where we should expect Rambakia to be, and quite possibly where Rambakia was. Amongst the coins and relics collected there, there is however no trace of Greek inscription; but that this corner of the Bela district was once flourishing and populous there is ample evidence. Perhaps I may be allowed a word or two of conjecture about Rambakia. The name is distinctly Hindu, and the people of this country are Hindus still, in origin, if not in religion. They are red skinned Rajputs, calling themselves Lassis, or Lumris, but as distinct descendants of the solar race as any in Rajputana. We are told that the Oritæ were not Indian by Arrian. That is to say they were unlike the Punjabis and Sindis encountered previously by the Greeks. I do not see why we need look further for the Oritæ than to these Lumri tribes of Las Bela. There is other mention of Rambakia in the *Periplus of the Erythrean sea*, where it is written about the Makran coast that "there is a bay which bears the name of Terabdoi from the midst of which a cape projects. Behind it at a distance of seven days journey from the coast is a city, where the king resides, called Rambakia." McCrindle identifies Terabdoi with Urmara and the distance from Urmara to Khair-kot corresponds to the seven marches, as does the general description of the district, which is said to produce "the fragrant gum Bdellium" on the "part near the sea" which looks as if it were not far from the coast. But we must not jump to hasty conclusions. The description of the harbor of Terabdoi applies more forcibly to Gwadar than to Urmara and there are traces of the name Rambakia elsewhere than in Bela. It is one of the great difficulties with which we have to contend in unravelling the network of ancient geography that the same name is so constantly repeated. All we can say is that Alexander's Rambakia could not have been far from Khair-kot.

From Rambakia Alexander proceeded with half his targeteers and part of his cavalry to force the pass which the Gadrosi and Oritæ had conjointly siezed "with a design of stopping his progress." This pass might either have been the turning pass at the northern end of the Hala—or on the water parting from which the Phur river springs to the west of the Hala—further on. I should think it was probably the former where there is better room for cavalry to act. Chief amongst the Lumri clans of Las Bela are the Gadurs, a people whom I have especially sought out with a view to discovering whether they could (as Bellew suggests) represent those Asiatic Ethiopians of whom Herodotus writes. But there is nothing of the people of Kush about them. They are

true Rajputs, and their home has been in the country from time immemorial. But though they are not Kushites I agree with Bellew that they were Gadrosii, the Gadrosii of Alexander's days. They hold themselves somewhat distinct from other Lumri clans, and it almost appears as if they had once been powerful enough to give their name to the whole district of Gadrosia, as described by Arrian. I offer these suggestions with all humility to ethnographers, but it really looks as if we might go further for the Gadrosii and fare worse. I should like to say a word about the Arabii and the river Arabius, but time is short, and I can only just mention that north of Bela on the Purali river we have found the remains of a stone built city so clearly allied to the "ghorbastas" of Makran and Sind, and the Mashona relics of Zimbabwe, that we may at least be allowed to conjecture that this country between the Purali and Karachi was actually once held by Arabs in those far off pre-Mahomedan days when the Arabs were the master builders of the eastern world.

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crossing of the Purali, in a district that might once have been cultivated and populous. We have found two such sites, one now called Khairkot to the N. W. of Liari commanding the Hala pass, and another called Kotawari south west of Liari, and very near the sea. The latter has but recently been uncovered from the sea, but an existing mud wall, and its position on the coast indicate that it is not old enough for our purpose. The other, Khairkot, is an undoubted relic of mediæval Arab supremacy. It is the Khar of Etrusi on the high road from Arimah (now Bela) to the great S. port of Debal, and the tale of it belongs to another history. Nevertheless Khairkot is exactly where we should expect Rambakia to be, and is possibly where Rambakia was. Amongst the coins and relics found there, there is however no trace of Greek inscription; but that this corner of the Bela district was once flourishing and populous there is an evidence. Perhaps I may be allowed a word or two of conjecture as to Rambakia. The name is distinctly Hindu, and the people of this country are Hindus still, in origin, if not in religion. They are not Sakas, Roputs, calling themselves Lassis, or Lunnis, but as distinct descendants of the solar race as any in Roputana. We are told that the tribes were not Indian by Arrian. That is to say they were unlike the Parthians and Soudas encountered previously by the Greeks. I do not see why we need look further for the Origin than to these Luni tribes of Las Bela. There is other mention of Rambakia in the Periplus of the Erythræan sea, where it is written about the Makran coast that "there is a city which bears the name of Terabdelor from the midst of which a river projects. Behind it at a distance of seven days journey from the coast is a city, where the king resides, called Rambakia." Moderns identify Terabdelor with Urmara and the distance from Urmara to Khairkot corresponds to the seven marches, as does the general description of the district, which is said to produce "the fragrant gaele Blidum" on the "part near the sea" which looks as if it were not far from the coast. But we must not jump to hasty conclusions. The description of the harbor of Terabdelor appears more forcibly to Greek than to Urmara and there are traces of the name Rambakia in the town of Bela. It is one of the great difficulties with which we have to contend in unravelling the network of ancient geography that the same name is so constantly repeated. All we can say is that Alexandria Rambakia could not have been far from Khairkot.

From Kandahar Alexander proceeded with half his baggage to a part of his cavalry to force the pass which the Gedrosi and Orti had conjointly seized "with a design of stopping his progress." This pass might either have been the turning pass at the northern end of the Hala, or on the water-parting from which the Indus river springs to the west of the Hala farther on. I should think it was probably the former where there is better reason for cavalry to act. Chief amongst the Luni tribes of Las Bela are the Todars, a people whom I have especially sought out with a view to discovering whether they could have been a source of resistance to those Asoka tribes of whom Herodotus writes. But there is nothing of the people of Kandahar at them. They are

true Raiputs, and their home has been in the country from time immemorial. But though they are not Kushites I agree with Belw that they were Gadræi, the Gadræi of Alexander's days. They hold themselves somewhat distinct from other Luri clans, and it almost appears as if they had once been powerful enough to give their name to the whole district of Gadræia, as described by Arrian. I offer these suggestions with all humility to ethnographers, but it really looks as if we might go further for the Gadræi and fare worse. I should like to say a word about the Arabii and the river Arabius, but time is short, and I can only just mention that north of Bela on the Purai river we have found the remains of a stone built city so clearly allied to the "ghilasas" of Makran and Sind, and the Mashona relics of Zimbabwe, that we may at least be allowed to conjecture that this country between the Purai and Karachi was actually once held by Arabs in those far off pre-Mahomedan days when the Arabs were the master builders of the eastern world.

Immediately after defeating the Oritæ (who apparently made little resistance) Alexander appointed Leonatus with a picked force to support the new Governor of Rambakia (Hephestion having rejoined the army) and left him to make arrangements for victualling the fleet when it arrived, whilst he pushed on through desert country into the territory of the Gadræi by "a road very dangerous," and drawing down towards the coast. He must then have followed the valley of the Phur to the coast, and pushed on along the track of the modern telegraph line till he reached the neighbourhood of the Hingol river. We are indebted to Aristobolus for an account of this tract in Alexander's time. It was here that the Phœnician followers of the army gathered their myrrh from the tamarisk trees—here is described the mangrove swamps in most graphic terms; and the euphorbias, which still dot the plains with their impenetrable clumps of prickly "shoots or stems, so thick set that if a horseman should happen to be entangled therewith he would sooner be pulled off his horse than freed from the stem" as Aristobolus tells us. Here too were found the roots of spikenard so precious to the greedy Phœnician followers. These same products formed part of the coast trade in the days when the *Periplus* was written, four hundred years later, though there is little demand for them now. It was somewhere near the Hingol river that Alexander made a considerable halt to collect food and supplies for his fleet. His exertions and his want of success are all fully described by Arrian, as well as the rude class of fishing villages inhabited by *Ikthyophagi*, all the latter of which might well be cut out of the pages of Greek history and entered in a survey report as modern narrative. After this we have but slight indications in Arrian's history of Alexander's route to Pura, the capital of Gadræia. Three chapters are full of most graphic and lively descriptions of the difficulties and horrors of that march. We only hear that he reached Pura sixty days after leaving the country of the Oritæ, and there is no record of the number of troops that survived. Luckily however the log kept by the admiral of the fleet, Nearkos, comes to our assistance here, and though it is still Arrian's history, it is Nearkos who speaks. We must now turn back to

follow the ships. I cannot now enter in detail into the reasons given by General Haig in his interesting pamphlet on the Indus delta country, for selecting the Gharo creek as the particular arm of the Indus which was finally selected for the passage of the fleet seaward. I can only remark that whilst the nature of the half formed delta of that period is still open to conjecture, so that I see no reason why the island of Krokala, for instance, should not have been represented by a district which bears a very similar name nowadays, I fully agree that the description of the coast as given by Nearkos can only possibly apply to that section of it which is embraced between the Gharo creek and Karachi. It is only within very recent times that the Gharo has ceased to be an arm of the Indus. For the present at any rate we cannot do better than follow so careful an observer as General Haig in his conclusions. There can be little doubt that Alexander's haven, into which the fleet put till the monsoon should moderate, and where it was detained for 20 days, was *somewhere near Karachi*. That it was the modern Karachi harbour is exceedingly improbable. Of all parts of the western coast of India that about Karachi has probably changed its configuration most rapidly, and there is ample room for conjecture as to where that haven of refuge of 2,000 years ago might actually have been. Let us accept the fleet of river built galleys, manned with oars, and open to every phase of wind and weather, as having emerged from that haven about the beginning of October, and as having reached the island of Domai, which I am inclined to identify with Manora. Much difficulty has been found in making the estimate of each day's run, as given in stadia, tally with the actual length of coast. I think the difficulty disappears a good deal if we consider what means there were of making such estimates. Short runs in the river between known landmarks are very fairly consistent in the Greek accounts. On the basis of such short runs, and with a very vague idea of the effect of wind and tide, the length of each day's run at sea was probably reckoned at so much per hour. There could hardly have been any other way of reckoning open to the Greeks. They recognised no landmarks after leaving Karachi. Even had they been able to use a log line it would have told them but little. Wind and current (for the currents on this part of the sea mostly follow the monsoon wind) were either against them or on their beam all the way to the Hingol. They encountered more than one severe storm which must have broken on them with the full force of a monsoon head wind. From the point where the fleet rounded Cape Monze and followed the windings of the coast to the harbor of Morontobara the estimates, though excessive, are fairly consistent still; but from this point westward, when the full force of monsoon wind and current set against them, the estimates of distance are very largely in excess of the truth, and continue so till the pilot was shipped at Mosaria who guided them up the coast of Persia. Thenceforward there is much more consistency in their log. It must not be supposed that Nearkos was making a voyage of discovery. He was probably following a track that had often been followed before. It was clear that Alexander knew the way by sea to the coasts of Persia before he

started his fleet, and it is a matter of surprise rather than otherwise that he did not find a pilot amongst the Malli who, if they are to be identified with the Meds, were one of the foremost seagoing peoples of Asia. His Phœnician and Greek sailors evidently were strangers to the coast, and some of his mixed crew of soldiers and sailors had subsequently to be changed for drafts from the land forces. We cannot now follow the voyage in detail, nor could we, even if we would, indicate the precise position of those islands of which Arrian writes between Cape Monze and Soumiani; some of them may now be represented by shoals known to the coasting vessels, whilst others may be connected with the main land. I have no doubt myself that Morontobara (the "woman's haven") is represented by the great depression of the Siron-dha lake to which I have already alluded. Between Morontobara and Kokala (which about answers to Ras Kachari) they touched at the mouth of the Purali, or Arabius, not far from Liari, having an island which sheltered them from the sea, to windward, which is now part of the mainland. Near by the mouth of the Arabius was another island "high and bare" with a channel between it and the mainland. This too has been linked up with the shore formation, and the channel no longer exists, but there is ample evidence of the ancient character of this corner of the coast. Between the Arabius and Kokala (three days sail) very bad weather was made, and two galleys and a transport were lost. It was at Kokala that they joined hands with the army again. Here Nearkos formed a camp and it was "in this part of the country" that Leonnatus defeated the Oritæ and their allies in a great battle wherein 6,000 were slain. Arrian adds that a full account of the action and its sequel, the crowning of Leonnatus with a golden crown by Alexander, is given in his other work, but as a matter of fact the other account is so entirely different (representing the Oritæ as submitting quietly) that we can only suppose this to have been a separate and distinct action from the cavalry skirmish mentioned before. It must be noted that the coast hereabouts has probably largely changed. A little further west it is changing rapidly even now, and it is idle to look for the names given by the Greeks as marking any positive locality known at present. Hereabouts at any rate was the spot where Alexander with such difficulty had collected ten days supplies for the fleet. This was now put on board and the bad or indifferent sailors exchanged for better seamen. From Kokala a course of 500 stadia (largely over estimated) brought them to the estuary of the Hingol river (which is described as a winter torrent under the name of Tomeros) and from this point all connection between the fleet and the army appears to have been lost. It was at the mouth of the Hingol that a skirmish took place with the natives which is so vividly described by Nearkos, when the Greeks leapt into the sea and charged home through the surf. Of all the little episodes described in the progress of the voyage this is one of the most interesting; for there is a very close description given of certain barbarians clothed in the skins of fish or animals, covered with long hair and using their nails as we use fish knives, armed with wooden pikes hardened in the fire and fighting more like monkeys than men. Here we have the real aborigi-

nal inhabitants of India. Not so very many years ago in the woods of western India a specimen answering to the description of Nearkos almost literally, was caught whilst we were in the process of surveying those jungles, and he furnished a useful conundrum to ethnographical science at the time. Probably these barbarians of Nearkos were incomparably older even than the Turanian races which we can recognise, and which succeeded them, and which, like them, have been gradually driven south into the fastnesses of central and southern India. Mekran is full of Turanian relics connecting it with the Dravidian races of the south; but there is no time to follow these interesting glimpses into prehistoric ethnography opened up by the log of Nearkos. Nor indeed can we follow this voyage in detail much further, for we have to take up the route of Alexander, about which very much less has hitherto been known than can be told about the voyage of Nearkos. We may, however, trace the track of Nearkos past the great rocky headland of Malan, still bearing the same name that the Greeks gave it, to the commodious harbor of Bagisara which is likely enough the Dimizarr, or eastern bay of the Urmara headland. The Padizarr or western bay corresponds more nearly with the name Bagisara, but as they doubled a headland next day it is clear they were on the eastern side of the isthmus. The Pasiris whom he mentions have left frequent traces of their existence along the coast. Kalama, reached on the second day from Bagisara, is easily recognisable in the Khor Khalmat of modern surveys, and it is here again that we can trace a very considerable extension of the land seawards that would completely have altered the course of the fleet from the coasting track of modern days. The island of Karbine from which they procured sheep may very well have been the projecting headland of Giaban now connected by a low sandy waste with the mainland. It could never have been the island of Astola as conjectured by McCrindle and others. From Kalama to Kissa (now disappeared) and Mosarna, along the coast called Karbis (now Gazban), the course would again be longer than at present, for there is much recent sand formation here; and when we come to Mosarna itself after doubling the headland of Jebel Zarain we find the harbor completely silted up. It may be noted that this western bay of Pasni was probably exactly similar to the Padizarr of Urmara or of Gwadar, and that there is a general (but not universal) tendency to shallowing on the western sides of all the Mekran headlands. Here they took the pilot on board, and after this there was little difficulty. In three more days they made Barna (or Badara) which answers to Gwadar, where were palm trees and myrtles, and we need follow them for the present no further. Colonel Mockler who was well acquainted with the Makran coast, but hardly perhaps appreciated all the changes which the coast line has undergone (neither indeed did I till the surveys were complete) has traced the course of that historic fleet with great care. He has pointed out correctly that two islands (Pola and Karabia) have disappeared from the eastern neighbourhood of the Gwadar headland and one (Derenbrosa) from its western extremity; and he might have added that yet another is breaking up, and rapidly disappearing off the headland of Passabandar near Gwatur. He

has identified Kyiza (or Knidza) the small town built on an eminence not far from the shore, which was captured by stratagem, beyond doubt, and has traced the fleet from point to point with a careful analysis of all existing records that I cannot pretend to imitate. We cannot, however, leave Nearkos without a passing reference to that island on the coast of the Ikthyophagi which was sacred to the sun, and which was even in those days enveloped in such a halo of mystery and tradition that Arrian holds Nearkos up to contempt for expending "time and ingenuity in the not very difficult task of proving the falsehood" of these "antiquated fables." I have been to that island, the island of Astola, and the tales that were told to Nearkos are told of it still. There off the southern face of it, is the "sail rock" the legendary relic of a lost ship which may well have been the transport which Nearkos did undoubtedly lose off its rocky shores. There indeed I did not find the Nereid of such fascinating manners and questionable customs as Nearkos describes on the authority of the inhabitants of the coast, but sea urchins and sea snakes abounded in such numbers as to make the process of exploration quite sufficiently exciting; and there were not wanting indications of those later days when the Meds (now an insignificant fish-eating people scattered in the coast hamlets) were the dreaded pirates of the Arabian sea, and used to convey the crews of the ships they captured to that island, where they were murdered wholesale. It is curious that the name given by Nearkos is Nosala, or Nuhsala. In these days it is Astola, or more properly Hash-tala, sometimes even called Haftala. I am unable to determine the meaning of the termination to which the numerals are prefixed. Another name for it is Sangadip which is also the mediæval name for Ceylon. There can be no doubt about the identity of this island of sun worship and historic fable.

We must now turn to Alexander. We left him near the mouth of the Hingol, then probably 4 or 5 miles north of its present position, and nearer the telegraph line. So far he had almost step by step followed out the subsequent line of the Indo Persian telegraph, and at the Hingol he was not very far south of it. Near here Leonnatos had had his fight with the Oritæ, and Alexander had spent much time (for it must be remembered that he started a month before his fleet, and that the fleet and Leonnatos joined hands at this point) in collecting supplies of grain from the more cultivated districts north, and was prepared to resume his march along the coast, true to his general tactical principle of keeping touch with his ships. But an obstacle presented itself that possibly he had not reckoned on. The huge barrier of the Malan range, abutting direct on the sea, stopped his way. There was no Buzi pass (or goat track) in those days, such as finally, and after infinite difficulty, helped the telegraph line over, though there was indeed an ancient stronghold at the top, which must have been in existence before his time, and was likely enough the original city of Malan. He was consequently forced into the interior, and here his difficulties began. We should be at a loss to follow him here, but for the fact that there is only one possible route.

He followed up the Hingol till he could turn the Malan by an available pass westward. Nothing here has altered since his days. Those magnificent peaks and mountains which surround the sacred shrine of Hinglaz are indeed "everlasting hills" and it was through them that he proceeded to make his way. It would be a matter of immense interest could one trace any record of the Hinglaz shrine in classical writings, but there is none that I know of. And yet I believe that shrine, which next possibly to Juggernath, draws the largest crowds of pilgrims (Hindu and Mussalman alike) of any in India, was in existence before the days of Alexander. For the shrine is sacred to the goiddess Nani (now identified with Siva by Hindus) and the Assyrian or Persian goddess Nana is of such immense antiquity that she has furnished to us the key to an older chronology even than that of Egypt. The famous cylinder of Asshur-ban-ipál, king of Assyria, tells us that in the year 645 B. C., he destroyed Susa the capital of Elam, and from its temple he carried back the Chaldean goddess Nana, and by the express command of the goddess herself, took her from where she had dwelt in Elam "a place not appointed her" and reinstated her in her own sanctuary at Uruk (now Warka in Mesopotamia) whence she had originally been taken 1635 years before by a conquering king of Elam who had invaded Accad territory. Thus she was clearly a well established deity in Mesopotamia 2280 years B. C. Alexander however would have left that Ziarat hidden away in the folds of the Hinglaz mountain on his left, and followed the windings of the Hingol river some 40 miles to its junction with a stream from the west which would again give him the chance of striking out parallel to the coast. We should be in some doubt at what particular point Alexander left the Hingol, but for the survival of names given in history as those of a people with whom had to contend, *viz.*, the Parkanoi, the Sagittæ, and the Sacæ, names not mentioned by Arrian. Now Herodotus gives the Parkanoi and Asiatic Ethiopians as being the inhabitants of the seventeenth satrapy of the Persian Empire, and Bellew suggests that the Greek Parkanoi is a transcript of the Persian form of Parikan, the plural of the Sanskrit Parva-ka—or in Pushtu the *Bar-rohi*—or men of the hills. However this may be, there is the bed of the stream called Parkán skirting the north of the Taloi range and leading westwards from the Hingol and we need look no further for the Parkanoi. In support of Bellew's theory it may be stated that it is not only in the heart of the Brahui country, but the Sajidi are still a tribe of Jalawan Brahuís of which the chief family is called Sakæ, and that they occupy territory in Makran a little to the north of the Parkan. There is every reason why Alexander should have selected this route. It was his first chance of turning the Malan block, and it led most directly westwards with a trend towards the sea. But at the time of the year that he was pushing his way through this low valley flanked by the Taloi hills, which rose to a height of 2000 feet above him on his left, there would not be drop of water to be had, and the surrounding wilderness of sandy hillocks and scanty grass-covered waste would afford his troops no supplies and no shelter from the fierce

autumn heat. All the miseries of his retreat were concentrated into the distance (about 200 miles) between the Hingol and the coast.

The story of that march is well told by Arrian. It was here that occurred that gallant episode when Alexander proudly refused to drink the small amount of water that was offered him in a helmet, because his army was perishing with thirst. It must have been near the harbour of Pasni, once again almost on the line of the present telegraph, that Alexander emerged from the sand storm with but four horse men, on to the sea coast at last, and instantly set to work to dig wells for his perishing troops. Thenceforward Arrian tells us only that he marched for seven days along the coast till he had reached the well known highway to Carmania, when he turned inland and his difficulties were at an end. Now that well known highway was almost better known then than it is now. He could only leave the coast near the Dasht river and strike into the valley of the Bahu, which would lead him through a country subsequently great in Arabic history, over the yet unsuspected sites of many famous cities, to Bampur, the capital of Gadorosia. From leaving the coast to Bampur the duration of his march with an exhausted force would be little less than a month. Working backward again from that same point (which may be regarded as an obligatory one in his route) the seven days weary drag through the sand of the coast would carry him no further than from the neighbourhood of Pasni, and that is why I have selected that point for the historic episode of his guiding his army by chance and emerging on to the shore unexpectedly, rather than the neighbourhood of the Basol river to which the Parkan route might naturally have led him. He clearly lost his way as Arrian says he did, or else the estimated number of marches is wrong. We are told by Arrian that he reached Pura the capital of Gadorosia on the sixtieth day after leaving the country of the Oritæ. This is a little indefinite, as he may be considered to have left the country of the Oritæ when he started to collect supplies from the northern district, and we do not know how long he was on this reconnaissance. Probably however the date of leaving the coast and striking inland up the Hingol river is the date referred to by Arrian, in which case we may estimate that he spent about twenty-four days negotiating the fearful country opened up to him on the Parkan route ere he touched the sea shore again. This is by no means an exaggerated estimate if we consider the distance (something short of 200 miles) and the nature of his army. A half armed mob which included women and children, and of which the transport consisted of horses and mules and wooden carts dragged by men, cannot move with the facilities of a modern brigade. Nor would a modern brigade move along that line with the rapidity that has distinguished some of our late manœuvres in Afghanistan. On the whole I think the estimate a probable one, and it brings us to a consideration of Bampur as the ancient capital of Gadorosia.

I am well aware that another place, Fahrñj, halfway between Bampur and Kirman and on the edge of the Kirman desert has been accepted by scholars as the ancient capital of Gadorosia ever since the late Sir

O. St. John discovered it during the progress of the Sistan Commission. The name Fahraj is indifferently Fahraj, Purag, or Pura, and the ruins of it are extensive and undeniably most ancient. St. John points out that it is the probable place of junction between the forces of Alexander and of Craterus who joined before reaching Kirman, and could only have joined about this point; and that it is about 60 days march from the country of the Oritæ as then understood. Against this I have to urge that it is improbable that the country of Gradrosia extended so far to the north west. Fahraj is well within the natural Kirman division of Khorasan now, and probably was always so. Although I agree that it was by the caravan route across the desert from the great bend of the Helmund to this point that Craterus with his elephants and heavy baggage must have joined Alexander, I do not find it stated anywhere that he joined at Pura—but that he joined when Alexander was on his way from Pura to Kirman. Again I cannot agree that St. John's estimate allows sufficiently for the slow progress of the Greek force in face of such difficulties as we know of, and there is finally this great objection to Fahraj which I think is conclusive. In order to reach Fahraj Alexander *must* have passed Bampur. There is no other way consistent with Arrian's account. Bampur is however a city as ancient as Fahraj, and not far to the east of Bampur is the site of a still more ancient (though now reoccupied,) city called by the very names that Fahraj is known by—*viz.*, Purag or Pura; and Pura is the modern appellation. Thus there are two places with identically the same name, Fahraj and Pura, and as no mention is made of Alexander's passing the latter, and as the latter is within the limits of what we believe to be Gadrosia, I have myself no hesitation in assigning that position to the ancient capital of the Gadrosians. We have now followed Alexander out of India into Persia. Thenceforward there are no great geographical questions to decipher, or knots to be untied. His progress was a progress of triumph and the story of his retreat well ends with the thrilling tale of his meeting again with Nearkos, after the latter had harbored his fleet at the mouth of the Minab river and set out on the search for Alexander guided by a Greek who had strayed from Alexander's army. Blackened by exposure and clothed in rags, Nearkos was unrecognised till he announced himself to the messengers sent to look for him. Even Alexander himself at first failed to recognise his admiral in the extraordinary apparition that was presented to him in his camp, and could only at first believe that his fleet must have perished and Nearkos and Arkias were sole survivors. We can imagine what followed. Those were days of ready recognition of service, and no despatches, and all Persia was open to the conquerors to choose their reward. But all history has its moral, and the moral of the story of Alexander's retreat might easily be mistaken, if indeed it has not been so mistaken though all time. Arrian is not a good natured biographer. Whilst giving to his hero all credit for his gallantry and his determination, he never forgets to sneer at his ostentation and an occasional display of what in modern slang would be termed bad form. Other writers than Arrian have told the story of Alexander's retreat, and of the disasters that attended it, and have

inferred, if not actually stated their conviction that where so great a general as Alexander failed it would be hopeless for others to attempt to succeed. Arrian however very clearly points out that which is most undoubtedly true, that it was only Alexander's obstinate determination to do that which had proved so fatal to Semiramis and Cyrus that led him to select the worst possible route through Makran. It is impossible to suppose that he did not know that there were better and more open ways, even though we may credit him with the wish to support his fleet by adopting a route as near the coast as possible. The high road between west and east that lies through Makran must have been known before Alexander's time, just indeed as we may be certain from the course which was steered by the Mosarna pilot as soon as he took charge of the fleet that the sea route to Persia was well known. After Alexander's time many centuries elapsed before we get another clear historic view into Makran; and then what do we find? A country of great and flourishing cities, of high roads connecting them with well known and well marked stages, armies passing and repassing, and a trade which represented to those that held it the dominant commercial power in the world, all flowing steadily century after century through that country which was fatal to Alexander, and which we are rather apt now to consider the fag end of the Baluchistan wilderness. The history of Makran is the history of India from time immemorial. Not all the passes of all the frontiers of India put together have seen such traffic into the broad plains of Hindustan as for certainly three, and possibly for eight, centuries passed through the gateways of Makran. As one by one we can now lay our finger on the sites of those historic cities, and first begin faintly to measure the importance of Makran to India ere Vasco di-Gama first claimed the honor of doubling the cape and opened up the ocean highway, we can only be astonished that for four centuries more Makran has remained a blank on the map of the world.

GENERAL SIR H. BRACKENBURY:—Your Excellency, if I rise to say a few words it is not to criticise, nor that I think I can add anything useful to what has been so ably said by Colonel Holdich, but because I think it would be a thousand pities that a lecture not only showing so much literary research but containing so much original matter and original thought, should be allowed to fall flat without a few remarks from some one, in connection with the subject of which it treats.

The lecture has been to me full of interest: I know of no subject in the wide range of military history more interesting than the marvellous march, of which the retreat to-day described formed the final episode, and no character more fascinating than that of the great commander who conducted that march. Think of this young man, a mere boy in years, starting with an army from Greece, marching through Europe to the Hellespont, crossing the Hellespont, marching through the length and breadth of Asia Minor and Syria into Egypt, establishing his authority in Egypt, returning through Syria, and marching through what is now known as Turkey in Asia into Persia, through

Persia into Afghanistan where he reached Kandahar then striking northwards through Bokhara to Samarkand, returning east of the Kabul River into India, and conquering his way to the banks of the Sutlej, or rather to the Beas, just above its junction with the Sutlej, and there only checked by the announcement of his officers that the men could not go further. What must that proud man have felt during the three days which he passed alone in his tent, waiting in hopes of a change in his men's minds. But it was not to be. The land and its treasures which he had intended for his troops were not to be theirs, for he was compelled to admit that the limits of human endurance had been reached.

Then commenced his retreat to and down the Indus. I had hoped that Colonel Holdich was going to tell us something of that portion of the retreat for it is full of historical and geographical interest; but I can well understand that it would have been impossible to deal with that subject as well as the one he has dealt with in the limits of a single lecture. Then it was, after sailing and marching down the Indus, that he reached its mouth, and after reconnoitring by sea, commenced that portion of the retreat which Colonel Holdich has dealt with to-day, sending part of his troops by sea under Nearchos, and conducting the remainder himself by land. It is an interesting question why Alexander chose this route by the Indus for his homeward march. It is related by some historian, I think it is by Arrian, that Alexander believed that in the Indus he thought he had found the source of the Nile. It is easy to understand how, having seen the Nile delta and having heard in Egypt of the enormous length of that river, and having heard on the Upper Indus of the great delta at the mouth of that river, he might well think they were one and the same.

There are many extraordinary features connected with this retreat which has been described to-day. In the first place consider what these ships were. They were rowing galleys that had been built high up in the river Indus for purposes of river navigation. What ships to put to sea with! There are many instances of troops marching by land accompanied by ships at sea, and the troops on shore being supplied by the ships, but this is the only instance that I know of where the ships were victualled by the troops on shore. Then the horrors and sufferings of the march through that terrible desert, the blazing heat and want of water. No one but Alexander could have successfully overcome these obstacles. And that was due to the character of the man; a character full it may be of faults, the faults of his age, but full of the most noble qualities. Think of the glorious courage of the man. Wherever difficulty arose, wherever the danger was greatest, he always put himself in the front to meet it. It was I think somewhere near Multan that at the assault of a city where there was some delay in his men mounting the wall, he himself sprang from the summit of the wall into the citadel, and was for sometime alone among the enemy, being terribly wounded by them but still holding his own till saved by his men. And then think of that incident which has been alluded to by the lecturer, how in this retreat through the desert, when the troops were dying for want

of water, and he was marching on foot at the head of his army, some men found a little water in a pool, and like good soldiers, brought it to their commander, and he would not drink it but poured it on the ground because there was none for his men. It is traits such as these that make his character so full of fascination. And if the lecture which has been given to-day should lead any of the officers who are present, and who may never have read the accounts of this wonderful march and the story of this wonderful leader, to study them, they will, I am certain, find in the history of the march and in the character of the march much of the deepest interest to every one who has the instincts of a true soldier.

In rising to convey a vote of thanks to the lecturer His Excellency the Commander-in-Chief said.—

LADIES AND GENTLEMEN,—I must not leave this chair without carrying out what I know are your wishes in returning thanks to Colonel Holdich for the very interesting lecture to which we have all listened this evening with so much pleasure. If we consider the differences of opinion that arise regarding the movements of troops which have taken place even in the memories of living men we shall be the more surprised that Colonel Holdich has been able to trace the route of Alexander and his army after twenty-two centuries have elapsed since they left foot-steps on the evanescent sands of time. Nor has he located the stages of the Great Conqueror's march, nor fixed the positions of the harbours at which the fleet of Nearkos sought refuge and supplies, from unsupported surmise. His disinterment of buried cities, his recognition of long forgotten places and names have been strengthened by arguments and proofs that go a long way towards carrying conviction with them.

The fact that these buried traces had to be followed in what we now call south-west Beluchistan has not made the task of the lecturer easier. Those that know its soil-less hills and the consequent unchecked violence with which the rain storms sweep down to the rivers and natural drainage channels will feel that nature's process of "paring the mountain to the plain" is there going on with more than customary rapidity, wiping out the old land marks and merging them into the level sameness of the lowlands.

As your Chairman, I must now couple the name of Sir Henry Brackenbury with that of the lecturer in our vote of thanks. He has added to the interest and instruction to be derived from the lecture by analysing with characteristic capacity the military significance and usefulness of the lessons to be learnt from the unexampled enterprise and dauntless intrepidity of the greatest conqueror of ancient times.

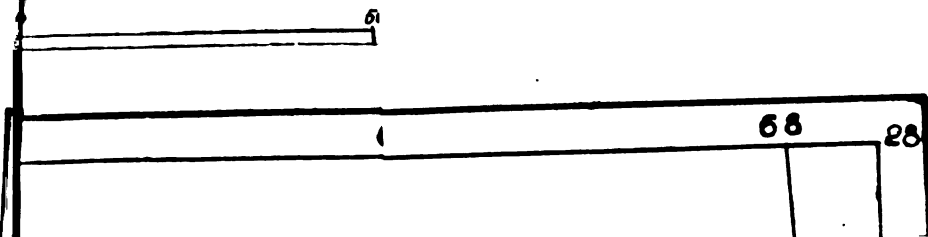
H MAP

COMPANY

FROM INDIA

Holdich, R. E.

= 34 Miles.



THE CONSTRUCTION AND WORKING OF THE NARROW GAUGE FIELD RAILWAY.

Translated from the Russian

By Captain OFFLEY SHORE, 18th Bengal Lancers.

Communicated by the A. Q. M. G. Intelligence Branch, Quarter Master
General's Department.

The experiments which for some years past have been carried out by the Prussian Railway Troops relative to the construction and working of the 60 centimetre field railway have satisfactorily proved both its capabilities as to transport, and safety of movement along it.

In particular, the following points have been settled.

The width of 60 centimetres selected produces eminently satisfactory results, and it has been conclusively proved that perfect safety of movement has been arrived at along a military railway of this gauge, which would be laid down rapidly and without ballast.

The principal advantages of the 60 c. m. gauge are:—

1. The possibility of laying it down even along narrow roads without interfering with the ordinary traffic.
2. Its pliability admits of its being used at very sharp curves, and consequently of its use along the existing net work of ordinary roads.

Where trains are to be drawn by steam power, the radius of a curve must not be less than 30 metres, but the plan and profile of the Railway. waggons alone can travel over curves with a radius of 10 metres.

Where a train weighing 60—70 tons has to be drawn by one locomotive, the gradients must not be more than $\cdot 025$; but gradients of $\cdot 02$ do not interfere with the working of the line—where gradients exceed $\cdot 02$, but are less than $\cdot 025$, and extend over a length of 400—500 metres, they must be interspaced with levels at least as long as the length of a train.

Where the gradients are short they may even be as steep as $\cdot 04$: but it is then necessary to maintain the following relations between the length of rise and the steepness.

With a gradient of $\cdot 025$, length of rise may be 300 metres.

Ditto $\cdot 033$, ditto ditto 200 „

Ditto $\cdot 04$, ditto ditto 100 „

One locomotive under these conditions can then draw a train of the weight abovementioned.

With a previously acquired sufficient momentum and a length of rise not exceeding the length of the train, the gradient may be $\cdot 055$.

For steam traffic the weight of the wide base rails should not be

Rails and Sleepers. less than $9\frac{1}{2}$ kilogrammes to the metre.
A length of 5 metres (five) for rails was found to give the best results. Sleepers 14—16 centimetres wide should not be less than 1·2 metres long, and the space between each, 65—75 centimetres.

With the object of having the most powerful locomotives and at the same time bring as little pressure on the rails as possible, it was decided to employ 6-wheel double action engines (duplex and compound) similar to those in use on the Bosnian 76 centimetre railway.

Engines of this pattern, ordered from the Munich firm of Kraus and Co., proved on trial by the railway brigades to be easy of control and easy running, not only over the heavier gradients but also down the inclines after an ascent; their centre of gravity was low, and they were very durable.

The boilers were tested with a pressure of 20 atmospheres.

Maximum pressure permissible during movement—15 atmospheres.

Weight of locomotive whilst working, 15 tons. The following table gives the tractile capacity of these engines:—

On a gradient of	·01 up, from	110—120 tons.
Ditto	·02	60— 70 „
Ditto	·25	50— 55 „
Ditto	·033	35— 40 „
Ditto	·04	28— 30 „

With practice and a knowledge of his engine a driver can in several ways get more work out of it than is shewn in the foregoing tables; as, e. g. by knowing how to utilise the momentum and by increasing the steam pressure.

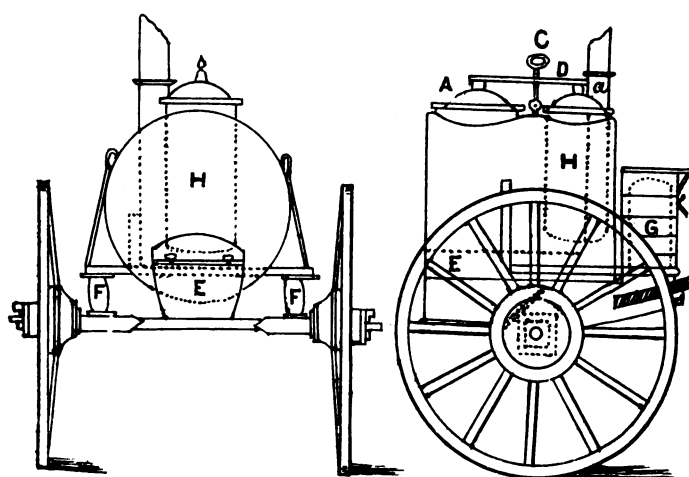
An engine requires 125—200 kilogrammes of coal and 600—900 litres of water per hour's run, but these figures are dependent on the weight of the train, steepness of the gradient and the rate of movement. The engines, however, can carry enough water and coal for a 2—2½ hours run and consequently require no tenders.

Average speed—15 kilometres per hour, but this may be considerably increased on a well laid line.

Each engine has an elevator (pump) and can therefore draw its own water direct from springs and wells, thus obviating the necessity for water-standards.

A composite half waggon was constructed out of 2 separate 4-wheel platforms, with a carrying capacity of 5 tons (five.)

The most convenient height for the wheels appeared to be 45 centimetres, and the distance between the fixed axles 70 c. m. For steam draught the single flanged wheel proved better than the double—and where the metals are sufficiently strong to resist lateral pressure, seem



to prevent the waggons leaving the rails better than the double flanged ; besides the disadvantages of double flanged wheels are :—

1. That they produce greater friction on the metals and consequently diminish the tractive power of the locomotive.
2. That they can only be used on rails whose heads are of the ordinary dimensions.
3. That the difficulty of constructing points and crossovers is much greater than in the case of the single flanged.

The 60 centimetre gauge is quite suited to the transport of passengers, carriages are constructed of two platforms carrying the carriage body ; inside two benches are fixed lengthwise to seat 10 people each giving an accommodation of 20 people per carriage.

THE TWO-WHEELED FIELD KITCHEN.

Translated from the Russki Invalid.

By Capt. OFFLEY SHORE, 18th Bengal Lancers.

Communicated by the A. Q. M. G. Intelligence Branch, Quarter Master General's Department.

Up to date various patterns of field kitchens have been experimented upon in different branches of the service but none of them have proved satisfactory owing to their failure to fulfil the following necessary conditions :—

Simplicity of construction—durability—lightness—and portability.

Staff Captain Kovaleff however has invented one which we shall now describe and which we believe more nearly approaches the wished for result than any others yet produced.

This kitchen is constructed as follows :—

To the axle of an ordinary two wheeled cart is attached a copper cylindrical boiler : above the boiler are two round openings A and *a* ; water and the food stuffs required for the preparation of liquid food are poured in at A, and a medium sized cylindrical boiler for the “Kasha” (oaten gruel) &c., is inserted at the opening *a* : the axis of the smaller and larger cylinders being thus perpendicular to each other.

The smaller boiler thus immersed in boiling water, prepares the “Kasha” simultaneously with the soup, and in proportion to the temperature of the latter.

Both openings are hermetically closed by means of the screw C and the bar D. Below the larger cylinder is placed the cleverly devised furnace E in a hollow especially provided for this purpose, connecting with Bromley's patent funnel.

The firebars are so arranged that the draught increases with the rate of movement, and thus enables the food to be cooked during the actual march.

The funnel is fitted with a shut-off, and may be folded back by means of loops to facilitate movement through woods, &c., &c.

In order that this pattern may be universally adopted by all arms, and adapted to every kind of transport, it is so constructed that it can be carried by 4 men (by means of poles attached to the sides of the boiler) and can also be placed on a pack saddle, in the latter case the boiler is simply detached from the axle, and the furnace taken out; the boiler alone then goes on to the pack saddle.

To minimise the effects of jolting the boiler is fitted with General Engleheart's patent buffers, F.

The driver's seat also forms a box G which can contain stores of various kinds, such as meat, groats, meal, &c.

The weight of the whole is about 13 Poods (about 469½ lbs.)

Cart 9 poods, (325 lbs.)

Boiler... .. 3 " (108 lbs.)

If we add to this the weight of the food in course of preparation, say for 150—170 men, the stores of provisions and the driver, the whole will not amount to more than 28—30 poods (1017 to 1083 lbs.) which can easily be drawn by one horse.

Kovaleff's field kitchen was tried this summer by several arms of the service in the Moxon and Kieff military districts with the following results:—

1. The kitchen is so light that it can easily follow immediately in rear of the troops along with the 2 wheeled ammunition carts and even across country.
 2. The capacity of the boilers under trial which amounted to 15 vedegeor (40½ galls.) was found to suffice for the normal requirements of 150 men only, which falls rather short of the strength of a company on a war footing.
- The "Kàsha" boiler was also too small.
3. The cooking of the food proceeds automatically on the march without requiring any special attention from the man in charge as the steam valve gives ample notice when the water has reached boiling point.
 4. The food is cooked very rapidly. Three hours after the materials have been placed in the boilers, the men can be served out with a hot meal.
 5. The preparation of the food requires very little wood, almost half as little as in the ordinary system of cooking, and experiments shewed that the food could be cooked in the same time by using shavings instead of wood. On the move the consumption of fuel is greater owing to the increased draught.
 6. The boiler for the "Kàsha" was scarcely satisfactory, for the latter was hardly sufficiently cooked.
 7. All kinds of food can be prepared in this kitchen, fast-day and simple fare, and there is no chance of the victuals being smoked or burnt, as is the case with ordinary stoves.
 8. The issue of rations is very convenient; boiler and furnace can be readily cleaned, and this can be performed in 12 minutes, inside and out: the tinning of the boiler is however attended with some difficulty owing to the narrowness of the orifice.

9. The funnel is not satisfactory and would be in danger of being broken.
10. The kitchen is solidly constructed and repairs could be easily executed even by the men of the detachments themselves.
11. The drivers seat is well thought out and well adapted to driving:—
All the shortcomings above noted have now been corrected by the inventor.

The capacity of the boilers for "Stchee" and "Kàsha" has increased up to

200 men per Company.

150 " " Squadron.

the boiler containing the "Kàsha" is continued down to the furnace itself, so that now it is heated from below by the furnace and on one side by the smoke funnel, and the "Kàsha" is thus thoroughly cooked.

The walls of the boilers have been thickened, round iron hoops are substituted for the rivets and a wooden jacket lined with felt is affixed to the outside of the copper cylindrical boiler with the object of preserving it from damage and of keeping the food warm for a longer period than heretofore.

To facilitate the tinning of the boiler the funnel has now been placed in the centre.

Zinc boxes have been added for the preservation of the raw and cooked meat, the food for the next meal, &c., &c.

With all these improvements the weight of the whole kitchen has only been increased by 1 pood (36·11 lbs.)

As a military conveyance the 2 wheeled kitchen minus its boiler, may be used as a means of transport for wounded men, for carrying wood, bread, and other materials. In addition to this special fittings allow of three healthy men, two slightly wounded or one badly wounded man being carried in it.



PORTABLE FIELD KITCHENS.

Bogaevski's Pattern.

Translated from the Russki Invalid of 20th February 1894.

By Captain O. B. SHORE, 18th Bengal Lancers.

Communicated by the Asst. Quarter Master General, Intelligence Branch.

Since the attention of military men is at the present time especially turned to this question, we append a short summary of the field kitchen invented by Colonel Bogaevski, commanding the 14th Rifle Battalion, which has been under trial for nearly a year among the troops of the 4th Rifle Brigade.

This two wheeled kitchen consists of a field boiler of wrought iron with a hermetically closed lid, which goes into a furnace transported on a carriage with springs. Each portion of the kitchen is extremely simple and strongly constructed. Width of wheel track and dimensions of the wheels are the same as those of the military transport in use.

Capacity of the infantry pattern.....220 men.

Ditto cavalry150

The weight of the whole infantry pattern... 16 Poods.

Ditto cavalry..... 14½ „

Advantages.—

1.—The ordinary company kettle is retained and can easily be taken out of the furnace: this is very important because these kettles need not be allowed for in calculating baggage.

2.—Simplicity in tinning, can be readily done regimentally if ordinary shape* and takes out of the furnace easily.

3.—Facility with which the kitchen may be detached from its carriage and used as an ordinary kitchen in confined spaces as in the railway; at the refreshment points on the line, in field hospitals, in barracks, camps, &c.

4.—Adaptability of the carriage once the kitchen has been taken off to the transport of wounded.

5.—Great economy in fuel, which according to experiment proves to be 25-35% less as compared with the improved pattern and 50-60% as compared with the ordinary pattern of regimental kitchens.

This kitchen of Colonel Bogaevski's was inspected by a special commission ordered to assemble by the G. O. C. Odessa Military District during the summer of last year and again in the winter. Independently of this also each regiment of the 4th Rifle Brigade had one of these

* The unusual shape of the kettle in other patterns renders the operation of tinning very difficult: where the walls of the kettle are covered so as to include the furnace and smoke funnel.

kitchens during the manœuvres and it was tried in the barracks of the Ismail Reserve Battalion last November.

The Committee reported as follows on it:—

1.—Cooking proceeds as fast as under ordinary circumstances even whilst on the move or at a trot. Time required varying according to kind of food, 2-4 hours, food well cooked and does not burn.

2.—Any kind of fuel met with on the march can be used in it with satisfactory result:—One pood of common coal was required to cook "stehee" for a company on war footing at a temperature of 5° Reamur. (18° Fahrenheit.)

3.—This pattern of kitchen is very cheap.

4.—Construction very simple. Tinning of the (boiler) kettle and cleaning the smoke funnel unimpeded. Any soldier cook can understand its management.

Perfectly durable.

5.—Kitchen very portable and can go across country drawn by one horse.

Comparing above report with that of the troops who had been experimenting with it this field kitchen is undoubtedly simple, durable and portable, quickly prepares the rations, requires little fuel, and is therefore specially adapted to the requirements of the soldier.

We can only hope in conclusion that every opportunity may be given to the army to test these field kitchens in time of peace in order that we may arrive at the settlement of the important question of feeding the soldier on the march and after a fight without loss of time. The trouble and expense taken over this will not be in vain but will aid in maintaining the health and energies of the army in war.

THE ADAPTATION OF IMPROVED APPARATUS FOR THE PREPARATION OF HOT MEALS AT REFRESHMENT STATIONS ON THE LINE OF RAILWAY DURING MOBILISATION MOVEMENTS.

Translated from the Russki Invalid of 29th June 1894.

By Captain O. B. SHORE, 18th Bengal Lancers.

Communicated by the Asst. Quarter Master General, Intelligence Branch.

On the order for mobilisation being received the Railways are suddenly called upon to transport an enormous number of troops for a period extending over several weeks: and at several points along the lines these troops will have to be provided with food and drink.

This therefore is a matter which must be specially legislated for.

Let us suppose the refreshment station has to feed 12,000 men per 24 hours, passing through at the rate of 1,000 men every two hours; also that with the present system of boilers and kettles food requires five hours to prepare, then the station must have boilers for 3,000 men.

But it is evidently desirable to reduce the time required for the preparation of food to two hours, and this necessitates improved apparatus such as steam kitchens these, however, are costly and intricate and take up much space where every square yard is of importance in such cases. This reduction in time can, however, be attained by other and simple means as shewn by the Austrian instructions of last year for the formation and supply of railway refreshment stations. (*Anleitungen für die Braulichen Anlagen der Eisenbahn Verköstigungs und Tränkanstalten und für den Betrieb der Verköstigungs anstalt, 1893.*)

The Austrians have adopted the *Wetscherek* portable iron furnace (stove), which takes to pieces, with its boilers for the preparation of food.

This stove with its water boiler capable of supplying 500 litres (110 gallons) and iron funnel $4\frac{1}{2}$ metres long, weighs, without the food kettles, 596 $\frac{1}{2}$ kilogrammes (10 cwt. 7 qrs. 0.4 lbs.)

It can be put together in half an hour by ordinary unskilled workmen: on it, in addition to the water boiler which forms a part of it, is room for four food kettles each of a capacity of 150 litres (33 gall.): i.e., 125 portions of hot food.

A hot meal can thus be prepared for 500 men at once, in addition to supplying 40 $\frac{1}{2}$ vedëor (119 galls.) of boiling water.

Total length..... 4 metres.

„ breadth..... $\frac{3}{4}$ „

The *Wetscherek* kettle is in the form of a box constructed of steel plates: inside is suspended another smaller kettle with a moveable bottom: the sides of the smaller vessel are perforated so that any fluids contained in it may pass into the outer one, whilst all solids are retained: the object of this is to do away with the necessity for stirring the food, and also to prevent its burning. When cooked, the kettle is taken off the stove: the moveable bottom of the interior kettle removed (it folds in half on hinges) and the solids are thus allowed to fall into the outer kettle and mix with the fluids. The interior kettle is then lifted out, and the food in the outer one carried to the dining-room for distribution.

For the preparation of a hot meal of meat (400 grammes per man)

397 Grammes = 14 oz.

and various vegetables in a kettle on a stove of the above named pattern two

hours are necessary if the kettle is filled with cold water, but it can be reduced to one hour by filling it with boiling water taken from the boiler attached to the stove.

One hour is required to boil the water: and as the water boiler contains 500 litres this amount can be had every hour: (or 1000 in two hours.) Each food kettle takes 50-60 litres of water 200-240 for the four.

Thus the supply of boiling water not only fully meets the requirements of the food kettle but gives a surplus of 700-800 litres (154-176 galls.) for the preparation of coffee, tea or for washing up, etc.

In order that there may be no delay in filling the food kettle with meat (previously cut up into small pieces) vegetables and condiments, each stove can be supplied with a double set of kettles, i. e. eight; four

to be cooking and four away in the dining-room, being emptied cleaned and prepared again in their turn.

For a kitchen comprising 2-3 such stoves the following staff would be required in one relief :—

(a.) One man to look after stove, one cook, one stoker, four assistants (who may be women) to fill the kettles with water and food and chop wood.	Total	8
(b.) One superintendent and ten assistants (women) to cut up meat.	Total	11
(c.) Nine people (of which six may be women) to wash up dishes, prepare vegetables.	Total	9
	<hr/> Total... <hr/>	28

Of these 28, 20 may be women.

From the above it will be seen that if the refreshment station is to fulfil the condition of supplying troops with a hot meal at the rate of 1,000 passing through every two hours it must have a kitchen of the above mentioned kind with a double set of kettles, *i.e.*, 16 each holding 150 litres.

Besides supplying hot meals at the above rate and time, such a refreshment station could furnish intermediate detachments with hot coffee or tea owing to its great resources in boiling water.

(The Austrian instructions lay down that boiling water is to be simply poured over the coffee or tea without any further boiling : coffee then to stand for 25 minutes, tea for 15.)

It is worthy of note that several recommendations in the Austrian instructions are not borne out by our own practical experience : such as for instance the case where according to the Austrian method the meat is cut up raw but the bones are not put into the kettle &c., &c.

COSSACK SWARMS.

A Postscript.

By Lieut.-Colonel P. NEVILLE, 14th Bengal Lancers.

Since writing the paper on the above subject which appeared in the March number of this Journal, I have read with much interest Mr. McSwiney's translation of a Russian paper on the "Lava" system of attack.

This paper supplies very nearly all the information so much lacking in my first study of the subject of swarm attacks, and I would now very briefly review a few of the salient points therein noted, as a postscript to my original essay.

1. The first point deserving of attention is the existing decadence of the old warlike spirit among the Cossacks. This, the writer, M. Mitkevitch, while attempting to gloss over, clearly reveals, and this is quite in accordance with Professor Vambéry's views of their national present character, which he does not hesitate to describe as 'cowardly'. In the Turkish war, the Cossacks did little or nothing, or, if they did history is silent regarding them. M. Mitkevitch alludes to this at the conclusion of his paper. "In the last wars the Cossacks did not distinguish themselves in any exceptional way, but is it possible that such fact is to be attributed to want of courage and daring? We do not, and cannot believe that, otherwise they ought to have been struck off the roll of our military forces." He goes to excuse this failure by the fact that they attempted to act as regular cavalry, and this brings us to the second point.

2. The present training of Cossack cavalry is on the same lines as that of the regular troops, and the regulations regarding drill and manœuvre have been in force unchanged since 1875.

This the writer deplores, contrasting the present state of things with that of 1812.

"On the news of Napoleon's advance in 1812 the Cossacks who had assembled or joined the colours, even while still at their *stanitzas* (villages) used to practise all the evolutions usually adopted by them in war time, i. e., formed into "Lava" for attack, and with their war cry, charging with the lance, scattering, executing feats of horsemanship, and firing at the gallop.

Now nothing of the kind exists, or if it does it is only on paper; can it be expected therefore, that the Cossacks under their present system of training, should be able to achieve the fame of their ancestors?"

3. The Cossack, he avers is unsuited to the tactics of regular cavalry for the following reasons, *viz* :—

1. "The Cossacks are mounted on small horses, and although forming excellent fighting substance, they have no speed for short distances." They are mounted on "small shaggy horses with large heads and thick rough legs," which, however, in spite of their ugliness and want of speed, are "able to perform marches of 70 and more miles a day."
2. "The Cossack system of riding with snaffle bits, affording many invaluable advantages in comparison with the use of the curb, deprives Cossack close formation of that neatness and good order which is so essential when operating in large masses."
3. They ride horses of their own training, or, more accurately speaking, of no training at all, in fact horses *only just tamed*.
4. Each man provides his own horse, so that these are good, bad, and indifferent.
5. Horses are mobilized direct from grass, quite emaciated from poor living and obliged to get into their work and condition whilst *en route* to the seat of war.

For the above reasons he considers that Cossack cavalry is unsuited for shock action.

They have moreover "fallen away from their former types, and have not amalgamated with regular cavalry."

4. The next interesting (to us) point, is their decadence in horsemanship.

"At present the important training significance of skilled riding for producing bold, dexterous, and dangerous individual antagonists appears somehow or other to have diminished, and has degenerated in some Cossack regiments into mere individual feats occasionally executed for the purpose of attracting public notice, instead of being daily exercised in horsemanship for all bodies of Cossack troops."

There is a warning note in the above remarks to our Indian cavalry. Do we not also see in some regiments much valuable time wasted in the practise of "tent-pegging" "lime cutting"—*mere individual feats occasionally executed for the purpose of attracting public notice*, when there is such evident necessity for better training in mounted combat, which alone gives the trooper confidence in himself and tends to make him fearless in the *mêlée*.

5. The Cossack we are told excels in single combat, whilst it is stated that the regular cavalry of Russia is weak in this respect, and operations in scattered order are "risky" for them. The latter statement is so worded that it may be applied to any regular cavalry, but here in M. Mitkevith errs from ignorance of the cavalry of other nations. It is no exaggeration to say that within the last decade our British (and Native) cavalry have improved themselves in this respect, wonderfully. There seems to be to-day a re-action setting in. In many regiments

the mounted combat was over-done, and the horses, beginning to associate the sight of an enclosed tan-ring with blows from single-sticks and prods from dummy lances, grew unsteady, and often unmanageable. Then the cry arose that we were spoiling the horses. It seems to me however that while much time and trouble were given to the training of the men, little or none was devoted to that of the horses. This was our mistake, (one surely that can be rectified), and as we now clearly see the sort of troops who may one day oppose us, we should most decidedly give more, rather than less attention to the *perfection* of our troopers in individual horsemanship and the use of arms. Mounted as we are, we can overtake and ride down our worse-mounted adversaries, but let us make *certain* of being no whit behind them in the use of sword, lance, and rifle. Also speed alone is not all we shall require from the horse: Owing to their preponderance in numbers, our men must be prepared to combat several Cossacks at once and in this, success will depend on the handiness of his mount as much, or perhaps more, than on his skill as a man-at-arms.

As for operations in loose order being any way "risky" for British cavalry, that is of course absurd.

6. M. Mitkevitch advocates firing from the saddle for the Cossack 'lava'. He says that armed as they are with 'splendid rifles' they should be able to pour a crushing hail of bullets into front, flanks, and rear of any body in a close formation. No doubt they might do so if they were allowed. This point I have already dealt with except that I assumed they would dismount to fire. The fact of their firing from horseback, would make them far the less formidable, especially, as we have seen, as their ponies have no training whatever and are, it is admitted, only just tamed. Let us, however, carefully eschew this dangerous advice, and never, except for purpose of giving an alarm, have recourse to mounted fire, which is a mere waste of ammunition.

In the skirmishing combat, which must take place in opposing the 'Lava' tactics, files should be taught to act in mutual combination. Every horse should be trained to stand fire to such a point that the rider may safely be enabled to fire standing, with the rein over his right arm.

Supposing then, that front and rear rank men work together in pairs—one dismounts and fires, while the other remains mounted to ride down any opponent who may endeavour to attack him while on foot. A cool, active man, on foot holding his horse, and armed with a magazine, or Martini carbine, ought not to fear the assault of three mounted opponents, even if alone; and, when supported by a mounted comrade, should not be dismayed by double that number. He can shoot them down one after the other. This is the system which it now behoves us to inculcate.

My former paper dealt only with the action of the Division, supported by horse artillery and machine guns. In the case of bodies of cavalry acting alone, without guns, dismounted fire from a screen of skirmishers will be the most effectual way of keeping the Cossack swarms at a distance from the main body.

As such tactics will entail a far greater expenditure of ammunition by the cavalry soldier than at present provided for, it will be necessary for us to devise some means by which a reserve of small-arm ammunition shall accompany each division or Brigade in the field.

7. My remarks as to liability of swarms to panic seem fully borne out by M. Mitkevitch. He says—

"The system of operation by "Lava", like everything else in the world, has it's weak side. In order to create a terrible weapon out of the individual actions of the Cossacks in "Lava" it is necessary for each Cossack to execute his duties as well and courageously as possible. At the same time the supervision over individual Cossacks, owing to the wide area over which they are scattered, is minimised to a degree, and the troop to a certain extent gets beyond the control of it's troop officer, and for this reason there is the danger lest Cossacks under adverse circumstances, being cut off from the immediate influence of their officers, should retreat.

This is undoubtedly one of the weakest points of this system, and, in the event of the Cossacks being insufficiently prepared, may lead to grave results."

To sum up,—after reading M. Mitkevitch's paper, the Cossack appears to me a far less formidable adversary than I before had imagined. His warlike spirit has decayed. His horsemanship has fallen off. He is not trained to war in the the manner best suited to his characteristics and traditions, but is only exercised in the tactics of regular cavalry for which he is eminently un-fitted. Though armed with a "splendid rifle," he is advised, by the champion of the "Lava" tactics, to use it from the saddle, whereby the value of his weapon is minimised, and he is clearly very liable to panic.

Our own procedure of preparation for possible war in Central Asia, is clearly marked out for us. Increased attention to individual horsemanship and proficiency in the use of arms ; training of all horses to stand fire by their dismounted riders while holding the reins ; the addition of a battery of machine guns to the division and like weapons for the better protection and independence of the horse artillery, and lastly an adequate and suitable arrangement for a sufficient supply of reserve small-arm ammunition in the field.

If these points are duly attended to *without delay*, we may confidently enter the arena with any number of Cossacks that Russia can produce, and shall, I am persuaded, satisfactorily dispose of them.

The Journal
OF THE
United Service Institution of India.

VOL. XXIII.

1894.

No. 117.

GOLD MEDAL ESSAY: 1894.

“ON THE TACTICAL TRAINING IN DISTRICT CONCENTRATIONS, BEST FITTED FOR PREPARING THE ARMY IN INDIA FOR WAR:—

- (a) Against a civilized enemy.
- (b) Against Savage Tribes in mountain or jungle warfare.”

BY

CAPT. F. C. CARTER, NORTHUMBERLAND FUSILIERS.

“ A Posse ad Esse..”

Bugeaud wrote that “when attempts are made to lay down principles in war, a large number of officers at once solve the problem by saying *everything* depends on circumstances. As the wind blows, so must the sails be set; but, if the proper sail and the proper amount of sail suitable to each wind is not known beforehand, how can sail be made at all?” It is for this very reason that in India, perhaps more so than in any other part of our possessions, it is imperative that we should train our army to successfully undertake the varied species of warfare that it may be called upon to engage in, so that “when the blast of war blows in our ears” we may, to use Bugeaud’s metaphor, know the proper amount of sail suitable to each wind, and how to set it.

Our soldiers must, it is clear therefore, with such a wide scope of operations as our Indian Empire embraces, be taught to fight in plains and valleys, over mountains and through impenetrable jungle. Against, on the one hand, a civilized enemy armed with modern guns and rifles, and with every appliance of war that science can bring to bear upon it, led by Generals who have made the art of war the study of their lifetime, and who blend

with theoretical knowledge, the experience of warfare waged against civilized foes in Europe, an experience such as has never been the lot of those who will lead us in the future to obtain. On the other hand, against semi-civilized and savage foes in mountainous country, dense jungle, or sandy deserts; against foes, who as yet unversed in the art of war as we understand it in these *fin de siècle* days, are nevertheless warriors to the manner born, inured from boyhood upwards to a life of hardship, struggles, and warfare; nature's fighting men, who stamp with a realistic brand, the theories of natural selection and survival of the fittest. Warriors who, although perhaps ignorant of the mechanism of breechloaders and Maxims, are yet from sheer force of numbers, from their inherent talent for organisation and mobilisation, and from their fanatic and lasting valour, by no means to be despised by the civilized soldiery of modern times.

The history of the Campaigns in which the army of India has taken part during the last fifteen years even, gives manifold examples for those who are desirous of studying the subject of warfare as carried on by our Indian Forces in various climes and localities, and under circumstances differing one from another to a degree not to be found in the records of modern battles of other nations. Afghanistan, Egypt, the Soudan, Burmah, the N. E., the N. W. Frontiers, to say nothing of small internal riots within the limits of our Indian Empire, all have been productive in the way of instruction, and are useful "Guides to battle formations" whether against civilized or savage foes.

The mere study however of the history and art of war is not sufficient in itself to ensure that in times of emergency our officers and men shall be qualified to take the field. Practice and actual experience is what is required. Theory, by which is meant the study of experiences of others, is no doubt most valuable; but, theory and scientific attainments alone, as Lord Wolseley tersely remarks, can never make a good staff officer or leader in war.

Our late chief, Lord Roberts, has made it very clear that the only satisfactory way of properly training our officers and men in the work that it is their calling to perform, is by the concentration of troops, while the Pax Britannica reigns supreme, for Peace manœuvres; which, although they cannot pretend to give the same experience and teaching as actual warfare, go a long way towards instructing commanders and commanded alike in what they will be called upon to perform in battle.

It remains therefore to be seen how the tactical training best fitted for preparing the Army of India for War against civilized enemies and against savage tribes in mountain and jungle can be obtained.

Peace Manœuvres, whether they take the form of Camps of Exercise or as is more frequently the case, for motives of

economy, of District Concentrations, are held in and about most of our big military centres during each cold weather. Until the present drill season, however, I believe no attempt has been made at these manœuvres to exercise troops with a view to warfare other than that against civilized foes in fairly open, level, or partially hilly country. Mountain and jungle warfare against savage tribes has, in all our big camps, been an unknown factor, though it has been practised frequently in some commands during both summer and winter, both in the hills and in the plains, but not ever, to my knowledge, in connection with Camps of Exercise or District Concentrations. That some of our troops are extremely proficient in Guerilla and Mountain Warfare, there is not a doubt; but this is due more to actual experience gained during the frequent little frontier wars, rather than to the intuition given in times of peace; and, in many cases, 'ere officers and men have become thoroughly "*aguerri*" to this description of fighting, they have had to undo a good deal learnt on the parade ground, and start afresh with experience and common sense as their guides in lieu of the drill book. I remember full well, during one campaign, after many little brushes with the enemy and not a few night attacks, a Sikh Officer asked me if we were ever going to advance against the enemy in "pucca (real) attack formation." This remark is instructive as showing within what narrow grooves the instruction imported to our soldiers has been laid.

The new drill book of '93 is certainly an improvement on that of '89, though it is sadly deficient in any special notes and precepts on the subject of jungle, desert, and mountain warfare. It has moreover with regard to attack formations yet to be applied in manœuvre, and experience alone will teach us whether after all it will not be necessary for the purposes of uniformity and drill (as I am myself inclined to think it will be) to lay down certain rules as to the *manner* in which extensions are to be carried out, and supports and reinforcements brought up. In doing this there need be no fear of falling back into the old stereotyped attack formation, bound down to a great extent by distances and zones. As it is at present, every General and every Commanding Officer has his own particular "plan" on which he wishes to see files extended and supported; and the result will be that the rank and file will, as stations and commanders change, be perpetually undergoing fresh instruction in the petty details of Infantry Drill Part I Section 47 *et seq* applied to the attack. This method, or rather want of method, strikes me as being the weak point in our present system, and is conducive to the production of "Turks" which according to Prince Kraft's experience are evils to be avoided.

As regards the Manœuvre portion of the book however, it is much more elastic than its predecessors, and the general obser-

vations are capable of being treated in a freer sense and the principles applied according to circumstances. In order therefore to practise the art of adapting general principles to specific circumstances, it is necessary that we should as far as is possible, at Peace Manœuvres, rehearse, for instruction of Officers and men, all the varied descriptions of warfare that our Army in India may be called upon to undertake; so that when the time comes, we may know the proper amount of sail for each wind and how to set it.

Having now given a cursory glance at the general principles of tactical instruction, I will proceed to detail in what manner I think they may best be adapted to the training of our Indian Forces at District Concentrations, for the purposes laid down in the heading of this essay.

Camps of Exercise (Cavalry and Artillery) and District Concentrations (all arms) are held regularly every cold season at most of the large Military centres and other selected places in India. To cover the cost of these a sum of about a *lakh* of rupees is annually provided for in the budget, and placed at the disposal of the Military Authorities in India. Putting Camps of Exercise on one side as without the pale of discussion in this essay, what I would propose in the first place as regards District Concentrations for Manœuvres, is that our Military Training be extended over *three years* instead of as at present; by this I mean that during the drill season of *The First Year*, there should be no District Concentrations (nor Camps of Exercise) but that corps should be left entirely in the hands of their Commanding Officers and District Commanders, and be occupied in regimental, and to a certain extent brigade training, preparatory to taking part in the District Concentrations. This would give Commanding Officers more chance of getting their regiments together under their own command for purposes of instruction in drill and manœuvre, which, what with Camps of Exercise, District Concentrations, Military training by squadrons and Companies, Musketry, and the hot weather, when the regiments are often split up in detachments, they seldom get enough time for now a days. With this proposal I am inclined to think 50 p.c. of General Officers Commanding and 99 p.c. of Officers Commanding will agree.

The Second Year.—Will be employed as at present, troops being concentrated in large bodies for Manœuvres in the plains of India during the drill season, and Operations will take place to impart tactical instruction to all ranks in warfare against civilized foes.

The Third Year.—Will be employed in District Concentrations on a smaller scale, consisting merely of the troops in the command and those passing through on relief. The Concentrations will be held in two portions. The first portion in the hills during the summer months, the second portion in the plains during the cold weather; both portions being entirely devoted to

tactical instruction of all ranks in warfare against savage tribes.

This *three years scheme*, in addition to imparting all the necessary instruction required, would save Government a large amount of money, as the cost of the first year would be nil, and that of the third year would be about half the sum usually granted.

With the savings thus obtained over a course of nine years, together with the usual yearly grant for the tenth year, a total of (after deducting the cost of Camps of Exercise for 6 years) approximately Rs. 5,50,000, I would propose that every tenth year one of the Divisions of all arms for mobilisation should be mobilized and moved, if not right up to the base of operations, at all events far enough to test the capabilities of our mobilization scheme, more especially as regards the Commissariat, Ordnance and Railway Departments. The cost of such a "rehearsal" has been estimated at 5,25,000 Rs.

I will now proceed to give "definite and practical proposals" for carrying out the necessary instruction for the three years.

First Year.—Although not actually "District Concentrations" I look on this year as a component part of the District Concentrations of 2nd and 3rd years; for during this period, Officers and men will be minutely instructed and practised in the minor details of what they will in twelve, eighteen, and twenty four months, be called upon to perform during the Manœuvres.

In Army order of 1st June 1893 H. R. H. by H. M., the Queen's command, requires of all officers a scrupulous adherence to the system of drill and Manœuvre as promulgated in our Infantry drill, (which it must be remembered, as regards Pt. V affects all branches of the Service.) To secure this "a thorough training is essential, great precision being inculcated in the early stages of a soldier's instruction, and later as much latitude being conceded to subordinate commanders as possible." By this means only is the efficient preparation of troops for the practical requirements of the field obtainable.

Everything to be carried out successfully must be done with an eye to precision in minor details, and officers and men must be trained stage by stage, from working in sections and companies to forming a portion of a unit of a Division in actual battle. Our "annual training" gives good opportunities to the squadron and company Commander to become acquainted with, and impart detailed instruction as regards Squadron and Company work in barracks and in the field to his officers, N. C. Os. and men. The above proposal would be simply to go one rung higher up the ladder of military training, and create a "Triennial battalion (or regimental) training" whereby C. Os. would have ample time to train their officers and men in drill and manœuvre, and thus be in a position to bring at the District Concentrations a well drilled,

well instructed, and thoroughly disciplined force to the Brigadier under whose command they will be ; instead of, as is not unfrequently the case now, a regiment of excellent material no doubt, but one that shows on the face of it a want of accuracy and precision in actual battalion and brigade *drill* as well as in the smaller details of manœuvre.

The time that a battalion regiment or battery is at the disposal of its commander during this preparatory year might be divided into two portions ; the first to be devoted to tactical training in warfare against civilized enemies, the second to instruction with regard to savage tribes in mountains or jungle.

For the first portion, the several drill books, especially the manœuvre portions are practically all that are required ; and tactical training, as laid down by authority, should be thoroughly worked out by means of drills, lectures, and manœuvres, until the Commanding Officer is satisfied that, as far as his corps is concerned, a thorough training has been obtained by all ranks for the practical requirements of the battle field.

With reference to this training I would lay great stress on the necessity of teaching officers and N. C. Os., to act independently on their own responsibility. This is, I have not the slightest hesitation in saying, one of our weakest points, especially as regards British troops. How many regiments there are that one could point to as being essentially "Officer's Commanding" or "Adjutant's" "or even "Sergeant Major's regiments," the whole machine being worked by one man ! This evil however does not lie only with regimental commands ; one sees often at our field days too much interference on the part of seniors. I have known commanders of Divisions or Brigades commence the operations with every intention of playing the role of G. O. C., but finally, after having sent every Galloper at their disposal all over the field to enquire what on earth certain Company or section commanders were up to, wind up by practically Commanding a Company of 40 file in the firing line !

This abominable system of one man trying to do the work of a hundred, has taken root terribly in our service, and every endeavour should be made from the earliest stages of a soldier's career to eradicate it. The result of the system, on an emergency arising, is too distressing for words, as has been proved over and over again on service. Our junior officers are not unfrequently "tied by the apron strings" until they suddenly find themselves in an independent Command, when not having been trained or encouraged to think and act for themselves, they are completely non-plussed, and failing to find any "superior authority" to refer to, become a prey to indecision, vacillation, delay and error, which in nine cases out of ten would not have happened, had they been accustomed from their youth up to think and act for them-

selves on emergencies, even though these emergencies may have been the simple "telling off" of a prisoner, or the tactical handling of a section in manœuvre.

Juniors certainly frequently err from simple lack of experience, but if they do so in the piping times of peace, how much more will they do so when the whiz of bullets sounds around them, when their men are becoming gradually decimated by the murderous fire under which they are advancing, and the noise and uproar of battle blended with the cries of the wounded drown any possibility of hearing orders passed on by gallopers or adjutants as they have grown accustomed to on field days. Supervision or interference by superiors will not be possible then; therefore is it most necessary that at District and regimental manœuvres, every chance should be given to juniors to act on their own responsibility, and even though they may have made a tactical mistake, an opportunity should be given them of rectifying the error, and thus saving the situation and their own reputation.

There is yet another point as regards training for manœuvres which requires more care and development on the part of Officers Commanding, and that is the training of all officers in issuing orders verbal and written. Take any average regiment of Cavalry, battery of Artillery, or battalion of Infantry, and it will be astonishing to find how few among the juniors, or even among the seniors, have any idea of framing orders quickly and on the spot, which will be intelligent Queen's English, and at the same time fairly meet the requirements of the case. That such a necessity frequently arises on service goes without saying, and yet, though this is known to all, how few Commanding Officers ever take the trouble to ensure that their officers shall be trained during peace time to undertake this portion of their duties during war. The art of framing orders of brevity and completeness to meet every emergency is by no means to be acquired in a day, and few officers, save those who have had the advantage of staff work, ever get a chance of perfecting themselves in this part of their military training. As regards the second portion of the preparatory year, viz: instruction in tactical operations against savage foes, in mountains or jungle, it is evident that something more than the one page of hints on savage warfare (compiled purely from experiences in the Soudan) in part V section 123 of the Infantry drill, is required for instructional purposes. What I would suggest is the addition of an "Indian Appendix" to the Infantry drill which, while in no way repeating nor in any way altering the existing book, would give valuable hints and precepts as to dealing with the Tribes on our Frontiers whether in rugged barren country, forest clad hills, desert plains or dense jungle. An Appendix of this sort would not run to more than 30 or 40 pages and could be incorporated

with the present drill book for use in India. We have in the Army of India many officers of experience in this description of warfare, and well qualified to undertake this compilation, and a few short notes and precepts to act as guides to those proceeding on Frontier wars would be of more service to all ranks than the whole of our existing edition of Infantry drill. Were this done officers and men alike could be trained in the general principles of savage warfare in mountains and in jungle working with the Indian Appendix as their guide, in the same manner as they are trained now-a-days to fight against civilized foes, with the drill books as the recognised authority.

Second Year.—This year will be devoted to Camps of exercise for Cavalry and Artillery and District Concentrations for Forces of all arms for tactical instruction in warfare against civilized enemies. To make my proposals more definite and practical I will draw out a scheme for a District Concentration of say about 9,000 or 10,000 men and then proceed to describe how I consider the tactical instruction required may be best given.

The troops forming this imaginary Concentration will be as follows, and it will take place (for motives of economy) at and around one of our Indian Military Centres; the troops being composed of (a) Those in the station (b) Those marching through in relief (c) Those in the District who are brought up specially for the manœuvres. These latter are the most expensive items and should therefore be in the minority.

Composition.

- 1 Battery R. H. A.
- 1 Regiment British Cavalry.
- 2 Regiments Native Cavalry.
- 2 Batteries Field Artillery.
- 1 Company R. A. Heavy (Elephant)
- 3 Mountain batteries.
- 3 Battalions British Infantry.
- 1 Company Sappers and Miners.
- 6 Battalions Native Infantry.

Before the Concentration takes place, a District order should be published showing where the incoming regiments will be encamped, giving the names of all the Staff officers who will be employed on the District H. Q. Staff during the Manœuvres, the names of O. C. Brigades and their Staffs, the composition of each brigade, the locations of each unit of the brigades, and defining the limits of ground told off for drill and manœuvres of each brigade and brigade division of Artillery. Every Officer, Sergeant Major, Sqd. Sergt. Major and Cr. Sergeant should be in possession of a map of the country over which the manœuvres will take place; these maps to be marked off in 1" squares and lettered as usual. In all operations of force against force, the defenders (*ab initio*)

will always be distinguished by wearing white in lieu of Kharki head dresses. Distinctive flags will be carried by the mounted Orderlies of G. O. C., C. R. A., and O. C. Brigades, and will be hoisted at their H. Qrs. in Camp or Cantonment.

A Synopsis of drills and manœuvres to be carried out will be drawn up somewhat as given in appendix A, presuming as is generally the case that the concentration lasts about a month.

By way of prefatory remarks I would here suggest not only with reference to this year, but, to training generally, that the "unexpected" which is of most frequent occurrence in war should be more often practised. This might be done by the Umpire-in-Chief suddenly converting a presupposed successful attack or defence into an unsuccessful one, owing to the sudden arrival (imaginary) of large reinforcements to one side or the other. Also that Casualties should be practised as they would occur on service; e.g., where the attack and assault is hottest as many as 15 to 20 p. c. might be put out of action, thus giving Commanders opportunities for showing how rapidly they can fill gaps. Not only should the rank and file be put out of action but Brigadiers, Commanding Officers and Company Commanders should be named by the Umpire-in-Chief to fall out; by which means it would be seen whether (as in action would have to be done) the next senior can at once carry on the duties of his superior who might be either killed or wounded.

It will be observed from the attached Synopsis that up to the 10th day the several arms work by themselves. From the 10th onwards the Artillery and Infantry work together, the cavalry joining in on the 19th, from which date manœuvres will be carried out with the three arms combined. The period during which the cavalry works with the other two arms is short and embraces only one day besides the final manœuvres, but this is I consider sufficient because the working of cavalry with the other two arms, although called "combined tactics of the three arms" is as a matter of fact merely carrying out the instructions they have learned when working by themselves. Cavalry are never relatively in the same position to infantry, which is after all the main attacking force, as artillery are. There is not the same touch and combination with other branches as there is with artillery and infantry. This arises from the fact that both the latter are throughout an action practically under the orders of the General Officer Commanding the Force; whereas, cavalry are practically under the orders of their own cavalry commander, who although he receives his orders from the General Officer Commanding before or at the commencement of operations, acts hereafter on his own responsibility, in a manner that is not possible with regard to the other arms.

As regards the tactical training of the cavalry, the Cavalry Drill Vol. II parts iv, v and vii, and Vol. III give all the instructions that it is necessary to follow. Endeavours, however, should always be made, as far as is compatible with the nature and expanse of the manœuvring ground, to arrange the operations so as to give them a more realistic colouring than is often the case. We are too apt, doubtless owing to the confined area over which cavalry can work at some district concentrations, to arrange our advanced and rear guard actions, attack etc. too much according to programme. Vol. II part VII para. 17 of cavalry drill states:—"The chance encounter is perhaps of more frequent occurrence in war than any other;" yet how often do we see regiments day after day practising the charge from the same rendezvous and against practically the same objective, which is frequently a stationary one. It is no easy thing for a cavalry leader to strike the exact point selected when the object is a moving one, and training in this art is most necessary; for should the squadron leader turn to follow his moving object, without paying sufficient attention to the squadron wheel, he will in so doing crowd up his inner wing and loosen his outer, the result being a "loose charge." For this reason I would advocate that the skeleton enemy should be a real enterprising enemy, and placed under the command of an officer specially selected for his dash and "go." A wide scope of operations should be given him, and every endeavour made to produce encounters in any place but that expected by the brigade. This will necessitate commanders having their wits about them, and keeping a sharp look out for any fresh development or surprise on the part of the enemy. Ground scouts and combat patrols will then be properly tested in their duties, which owing to "programmes" have become at times merely nominal.

Vol. II. Part iv, Para 13 of Cavalry drill which applies equally well to a brigade, *viz*: practice in "forming for attack in any given direction from any order of formation, and even while in the act of passing from one to another" should be thoroughly thought out by the Brigadier directing the training of the Cavalry Brigade, and he should arrange with the Commander of his skeleton enemy various schemes of attack in order to test the capabilities of his senior officers in the command of a brigade.

A very workable formation for Attack, with a first line and right and left supporting lines, so as to meet an attack to front or flanks, was employed by Colonel Palmer, Commanding the Cavalry Brigade at the Rawal Pindi manœuvres of 1892, and might with advantage be used against any enemy civilized or savage; though it must be borne in mind that with Cavalry as with Infantry any stereotyped "Form of Attack" is out of the question, as time and circumstances can alone decide what formations "Preparatory" or "Attack" are most suitable.

On the 8th day of the proposed Camp, the R. H. A. join the Cavalry Brigade and great stress should be laid on the smart and accurate working of the battery in conjunction with the Cavalry.

At our cavalry camps and District Manœuvres, the following faults not unfrequently occur. Either (a) the battery having moved out to the front, or front flank of the Brigade, gallop to the best position and come into action as quickly as possible, paying more attention to getting the first shot off quickly, than to accurate laying.

Cavalry and R. H. A. umpires should watch the laying of the guns most carefully and note in their reports any tendency shown to let steady laying give way to appearances. Prince Kraft, himself a gunner, is among the most earnest advocates for accurate laying at manœuvres, and though while admitting that when firing against cavalry rapid fire from a flank should be used, says in letter XII on artillery, "on no account should it be made a point that the first shot be fired as quickly as possible, no time should be lost about this but the most important point is that the first shot shall be well laid and well observed." or (b) as I have seen more than once during our cavalry camps and District Manœuvres the R. H. A. are too slow in taking up their position preparatory to the cavalry charge; or (c), as is not infrequently the case, the battery commander does not thoroughly and at once grasp the intention of the brigadier and selects a position too near or too much to the front of the cavalry. The result in both these latter cases is, that the great aim and object of Horse Artillery, *viz*:—to go in at once to decisive range "Shatter the enemy's cavalry and keep down the fire of the enemy's guns"* is lost, as before they have been able to get the range and produce any effect, *their fire is masked by their own Cavalry*.

A great deal of this slowness, especially towards the end of a day's manœuvres, is undoubtedly due to the excessive draught of the 12 prs. and over heavy country the strain on the teams is something terrific. No doubt the gun is an excellent one, but unless with the introduction of cordite it can be shortened and the carriage lightened, or the 6 pr. "wire" quick firing gun now under experiment for Horse Artillery, brought into use, it seems that our Royal Horse Artillery will find themselves at a disadvantage when opposed to a civilized foe armed with a lighter gun for galloping. Still the weight of the gun and carriage is not *always* the cause of this slowness, which is sometimes attributed to want of dash, training of the teams, or quick grasp of the situation; and these points can well be remedied when training our Royal Horse Artillery for warfare against civilized foes.

* Prince Kraft in letter XVII on artillery puts these objects inversely, but without doubt the *Paramount* duty of R. H. A. is to shatter the Enemy's Cavalry. Vide F. A. Drill. Ch iv sec 12 "H. A. with Cavalry."

As regards pursuits and retreats ; there is nothing much to be said with reference to this part of the training, other than is usually carried out at our camps. Perhaps the unsuccessful charge, retreat, and reforming of the Cavalry under cover of their guns might be oftener practised. We cannot expect *all* our charges to be successful ; and when working against a skeleton enemy there is not that necessity to halt and await the Umpire's decision ; so the above Manœuvre might well be practised, and give the Artillery Officer a chance of displaying his coolness and resource in the most delicate of tactical Manœuvres that ever falls to the lot of Royal Horse Artillery to play.

When opportunities occur ; The swimming of Cavalry and Artillery horses across a river should be practised by squadrons and divisions selected by the Brigadier. With regard to this, a perusal of Major Money's report on the Training of the 9th Bengal Lancers is interesting as well as instructive reading, and shows how very necessary proper training is, and how simple the art becomes with but a little practice.

During the training of the Cavalry Brigade on the lines laid down in the attached synopsis, every opportunity should be given to Senior Officers to show their aptitude in handling a Brigade. The Brigadier should frequently assume the role of "Chief Instructor" it being borne in mind that District Concentrations are essentially Camps of Instruction as opposed to the large Cavalry Camps of Exercise.

As regards the Artillery, the general Principles of ch. IV of Field Artillery Drill of '93 should be adhered to, and when all the available guns in the Force are collected together, (42 in this case,) tactical training for working Artillery in Mass as employed against civilized enemies should be the chief point aimed at. In any big battle of the future, it must be our aim to bring up our batteries by brigades into the right position, at the right time, and in preponderating numbers to that of the enemy employed in that particular action against us ; and that, when brought up, they should *hit their target*. Should these conditions be fulfilled then we may rest content that the tactical training of our artillery for employment against civilized troops has been properly seen to.

As before suggested with regard to cavalry, I would work the training as much as possible against a skeleton enemy ; for which purpose it will be seen, by the synopsis, 2 guns and the company of Sappers and Miners might be used. This while assisting the Commander Royal Artillery in the instruction of batteries, would give 4 days training in fire discipline to the company of Sappers.

From the 1st to the 9th I have left the Infantry to work entirely by themselves, and during this period every endeavour should be made to obtain that cohesion of units in Brigades and

Divisions, which can only be thoroughly mastered when different battalions are concentrated for Manœuvres under the command of a selected Brigadier. An intimate knowledge of all the tactical requirements of Infantry "in the presence of, or within striking distance of the enemy" is presupposed in all officers and men, who during the preparatory year should have been thoroughly trained in all these duties regimentally. What is now required is to complete by degrees the "mosaic" of the mixed force of all arms, that will be concentrated at the final Manœuvres of the camp, by working up the scale gradually; first, infantry by brigades by themselves, then force against force, then by divisions, then with Artillery attached and finally a force of all arms; always bearing in mind that in *every* detail, the enemy whether formed from other Brigades or merely a skeleton enemy, is presumed to be a civilized foe, armed with similar weapons to those used by us.

As regards the actual tactical training for the attack which our Infantry must be put through, I do not propose to go into detail and elaborate a long series of "Forms of attack" with plans, based on the principles of Pt. V of the drill book, suitable to every imaginable occasion that might arise, as this would be but to revert to a worse system than that in vogue in 1889; Moreover, I do not consider that this is the idea meant to be conveyed in the conditions laid down for this essay; for, to quote the drill book, "it is impossible to provide for all contingencies" and even were standard forms laid down for a hundred different species of attack, there would still be "the danger of a standard form being applied to cases for which it is unsuitable." What I do propose to do, is to endeavour to show that by the careful working out of a month's instruction, on the lines given in the attached synopsis, our troops may be taught by *experience* how the principles laid down in Pt. V may best be applied to Brigades and Divisions under various and any circumstances.

During the past 18 months, various Commanding Officers and others, labouring for the welfare of their corps, have given birth to a large number of "Forms of attack" with and without plans. Some of these are full of merit, some are not; and after puzzling my brain by picking those of others I have quite come to the conclusion, that the soundest plan of all is that summed up by Capt. Maude R. E., so far back as 1888, when he wrote (in his gold medal essay) "Train our men above the fear of death, prepare the way by Artillery fire, and then with a dense line of skirmishers in front, hurl battalion after battalion in line upon the decisive point. If our men will only stand half the losses their fathers bore, I prophesy boldly that no troops in Europe will stand before them. Immortality should be the soldiers highest reward; but, he should seek it in the spirit and not in the flesh."

The chief point undoubtedly to be considered when fighting against troops armed with a rifle of increased range and flatness of trajectory, is the best means of bringing up the firing line as near the enemy's position as possible, and keeping up an effective fire from 800 yards by always having as many men in the firing line as is "consistent with the efficient use of their rifles." Whether our system be "Treffenweise" or "Flugelweise" the main principle remains the same; and no matter in what manner the extended files of the firing line are at first extended, it must and *will* always happen in an actual fight that the Companies get mixed, ere they arrive in position to assault. After all, so long as the firing line can be kept fed by supports and reserves of its own battalion, it signifies little in the heat of the battle whether Capt A or Capt B is giving the executive words of command to the men composing the firing line to his immediate front. All attempts to bring up supports by files on a particular flank, and closing the firing line in to right or left will be out of the question at medium ranges in a modern battle against a civilized enemy. The supports and reserves will move by rushes through a "hail" of lead, and when ordered to reinforce will make for the nearest gaps in the firing line to their immediate front. Closing or diagonal movements during these exciting moments will be impossible; and instead of practising our men at drill attacks to do this, I would sooner see them trained to make straight for gaps caused by casualties, and thus accustom themselves to the mixing of Companies that will to a moral certainty occur in battle.

Another difficult problem to solve in this "Attack" question is, how to bring up the supports and reserves at the right time with as little loss as possible. The increased flatness of trajectory, creating as it does greater dangerous spaces, naturally makes this all the more difficult. Unless the ground offers peculiar facilities for cover, it is evident that the supports must keep at greater distances than formerly in the containing action, if they are not to be abnormally thinned out by the fire fight during the first phases of the attack. Yet it is absolutely necessary that the supports and reserves should, in the critical and most dangerous moments of the battle, approach nearer and nearer to the firing line; and the danger and loss must therefore be diminished by their being brought up by rushes. To keep supports *intact* in hand (unless the ground is favourable and the firing line has sustained but little loss) after entering the medium range, appears unnecessary. Victory, we are told, is effectively prepared at medium ranges; therefore we should make use of every available rifle where it can be effectively used both of firing line and supports, perhaps even of the Reserve; but in so doing we must remember that for moral as well as physical support there *must* be a body of men be-

hind to push on the attack at once should it show signs of wavering, and bring to its aid reinforcements in men *and their ammunition*.

We are as yet in the days of infancy as regards the use of the magazine rifle, and it has to be seen how far fire discipline in the heat of action can curtail the risks of running out of ammunition. The replenishment of pouches even during the heat of the action must of course be provided for, but even that would not prevent, should a fierce onslaught be made on the firing line, an enormous and unprovided for expenditure; Worth and Spichenin in the ante-Magazine days are examples of this. It may therefore follow that a firing line of the finest disciplined troops in the world, might find themselves reduced to nothing but cold steel when perhaps 400 yards or more from the position. This argument is considered conclusive as to the necessity of fighting in deep formations with supports, reserves, 2nd and 3rd lines in rear with their pouches full. Advocates of linear tactics with but a long enveloping line of attack, may be 2 or even 4 deep, should consider the results that would accrue from the absence of the moral and physical support of troops in rear.

Long range volleys by picked men from selected positions will no doubt be made use of in the future even by the attacking force; but to attempt any long range firing, except against extraordinary large masses by the firing line is but to court waste of ammunition. Long range firing is essentially the role of the defence; and every endeavour must be made by the attack to reach the medium range with the pouches of the firing line full. Volley firing as long as possible will be maintained by the firing line; but to expect any other than independent firing when advancing by rushes from 400 yards would be to expect too much. The great aim will then be to get over the ground as quickly as possible, and at the halts pour an unceasing fire into the position.

At the latter stages the advance will probably best be made by alternate portions of the firing line, so as to render mutual support to one another. An advance by Wings or from the centre by double Companies is advocated as preferable to and safer than an advance by alternate companies.

The best formation for the 2nd and 3rd Lines is a question that practical experience must decide; but considerations moral as well as physical, and national traditions should be taken into account regarding their formation. I am myself inclined to think that no better formation exists for British Troops in the 2nd and 3rd Lines than the time honoured "Thin red line" two (or even if necessary four) deep; and I would be inclined to insist, in spite of the heavy unreturned fire under which these lines advance, that the pace should be throughout a steady march, and as it nears the firing line, a march carried out with bands playing, colours

flying, advancing steadily shoulder to shoulder with all the pomp and splendour of War, as our forefathers did before us.

Whether the "2nd line" is brought into play at 400, 200 or even 100 yds. or whether in one or in successive lines upon lines, can but depend on circumstances and must be left to the commander. To know when the moment has arrived for pushing up one's 2nd line and commencing the assault is an art which can only be learnt by practice at Peace manœuvres, or experience in war.

When practising the attack on any position during our manœuvres, every endeavour should be made by commanders to adapt time, distances, extensions, reinforcements &c., to the circumstances of the moment, the nature of the ground and the tactics of the enemy. Sudden arrival of reinforcements to either side may completely alter any plan they may have thought out a few hours previously; and were they to attempt, in spite of circumstances, to adhere to any particular preconceived "plan of attack," they would to a certainty morally and physically come to grief.

Great stress should be laid at our Manœuvres on the proper direction being kept during an attack. Units will become mixed, and a certain amount of confusion must necessarily follow; but there should be no difficulty in keeping the main attack properly directed. Discs carried by the directing file, end on to the enemy, so as to be invisible from front but easily seen from flanks, (as recommended by Lt. Colonel Gunter, Norfolk Regiment) are preferable to flags.

The developing of flank attacks should be thoroughly practised, and Commanders should arrange the frontage of the several units of the firing line, and the position of other troops accordingly; by this I mean that it would be quite unnecessary to give the same small frontage to a frontal attack that was never intended to push home, or to back it up with the same depth of troops behind, as for a flank attack that was meant to be decisive.

Machine guns will play an important part in the attack, but it is a mistake to try and push them up too far. Their role undoubtedly is to support the attack from a flank with sweeping fire; and a good position at 800 or 1000 yards should be held to until their fire is masked.

When the Artillery join the Infantry on the 10th, (vide synopsis) the combined arms must be worked thoroughly together. At our field days we see a great deal of Artillery as a preparatory arm, but how seldom in the attack and assault do we see it made full use of. As the Infantry move forward it becomes the duty of Artillery to support them as closely as possible, and regardless of the fire from the enemy's Artillery every gun should at once open, during this stage, with rapid fire at decisive ranges on the points selected for attack. Prince Kr

says at the most decisive moment of the action, Artillery must not shun the very closest range ; adding that "as soon as the main attack has proved successful, its proper place in most cases is in the line of skirmishers."

And now to return to the synopsis of parades for the Manœuvres—From the 22nd to 26th there will be combined tactics on a large scale, force against force. For these field Manœuvres, one force, A we will say, might move out 25 miles from cantonments and the other, B (the defending force) about 15 miles. The attacking force being the strongest would probably push back the defenders until they made a final stand on 26th on a position, selected and strengthened by earthworks, covering cantonments. These five days would give grand opportunities for practice in outposts, advanced and rear guards, night attacks, reconnaissances, attack and defence, with all three arms. For the final day, as also for similar days in the earlier part of the programme, every endeavour should be made to select such ground as will give ample scope to commanders when planning their several portions of the attack and defence ; so that different formations may be arranged according to the nature of the ground, dispositions of enemy, and intentions of the commanders. To make my proposal of a practical nature, I will give a rough idea with plan (marked B) of what might be the tactical area of the battle field on the final day.

At early morning, the Cavalry of the attack report enemy in position on rising ground at C on both sides of road just S of River A and about a mile N of village B. Infantry under cover ; no guns seen ; enemy's Cavalry was met some 4 or 5 miles S of B and driven back under cover of their infantry fire. General Officer Commanding accordingly determines to attack, and eventually drives the enemy out of their position at C by Artillery fire and long range volleys from D. The enemy then takes up position in rear of river on rising ground E. F. G., strengthened by earthworks, with his guns about 500 yards to his rear on commanding ground, H. I.

General Officer Commanding directs Brigadier of No. 1 Brigade to attack with 2 battalions advancing from B and J supported by Royal Horse Artillery and machine guns. He is to make as big a demonstration as possible, but not to commit himself to the assault, unless he gets further orders. The 3rd Battalion 1st Brigade, General Officer Commanding keeps a small Division Reserve and directs Brigadier 2nd Brigade to attack the R flank of the position, moving as much as possible under cover of wood and ravines at K, the mountain batteries assisting. 1st Brigade push on to the attack ; No. 1 Battalion extending from village B so as to cover about three times the

amount of ground that it would were it intended to force a frontal assault. No. 2 Battalion advances in column or line under cover of copse marked J. and from thence similarly extends to the left of No. 1 Battalion across the open. This attack is timed so as to bring the fullest fire of both Battalions and guns from the high ground marked C on to the defence, when the left (main) attack comes into the open. This Brigade will entrench itself at C. with F. S. tools, to be brought up by mules. There will be no 2nd or 3rd Lines to this attack, but No. 3 Battalion will be held in readiness in case of need. One Regiment of Cavalry will be posted behind village B and the R. H. A., and machine guns will assist the attack, the former with the Cavalry eventually moving up to L ready to pursue.

As regards the left attack, the Brigade will move down under cover as much as possible to S of wood K, opening out where necessary. From S. W., of wood the attack will deploy, each Battalion finds, say, its own supports, reserve, and 2nd Line. The Battalion detached from 1st Brigade forming 3rd Line.

Now take for example No. 1 and 2 Battalions; they have arrived with but little loss, we will say, S of K about 1300 yards from the position, in line or shallow columns. From this point onwards they move through the wood, covered by scouts, in Company columns: No. 1 company as firing line, No. 2 as supports close behind and Nos. 3 and 4 reserve. Nos. 5 to 8 follow as 2nd Line. No extending need take place until actually within 800 or 900 yards of the position, when they come into the open, supported by the concentrated fire of 1st Brigade at C. The Reserves and 2nd Lines coming up under cover. No 3 Battalion has a harder time of it, and must extend at once at 1700 yards when debouching from cover of the wood. This Battalion works steadily up to the river, from which point advance is made in $\frac{1}{2}$ Company rushes. The river bank will afford temporary rest and cover to Reserves and 2nd Line. This left attack, consisting of 3 Battalions in 1st and 2nd Line and a 4th Battalion as 3rd Line, will push the assault right up to the enemy's position at E. F. Mountain guns will accompany the attack advancing on both flanks giving every support. One regiment of Cavalry will be under cover S of K ready to pursue. The 3rd Line will, should the position be taken, advance with the rest of its own Brigade (viz the 2 Battalion in position at C. and take up pursuit, or cover retirement as case may be. The cavalry and R. H. A. at L. and C. will conform to needs of pursuit or retirement.

To make the day still more realistic; just as the Left attack has developed itself, the Brigadier, one Cavalry Officer, one Commanding Officer battery, 4 Company Commanders and an adjutant might be named by the Umpire-in-Chief to fall back as wounded.

and their places be taken during the action by the next seniors. Should the "unexpected" be required; as the assault takes place the defenders might be supposed to be reinforced by overwhelming numbers, and the whole attack have to fall back under cover of its 3rd Line and retire in an orderly manner, with its Cavalry and R. H. A. forming part of the rear guard.

The above sketch of a field day is but intended as an idea of what might be done as regards tactical training for attack and defence against civilized foes; and gives an example of how, although adhering to the *principles* of part V of Infantry Drill, the actual attack formations adopted by the different units of the force may necessarily vary according to circumstances.

Third year.

During both portions of this year's training, I attach much importance to the proper working of the "skeleton enemy"; as during this year's manœuvres there should be no force against force *similarly armed*. A few selected Officers with a force of old soldiers (all natives if possible) who have had experience of the tactics and habits of "The Tribes on our Frontiers" should be told off for this purpose throughout the concentration. The sepoy should during the Manœuvres wear their "mufti" not uniform; standards similar to those in use by savage tribes should be carried; and they should on all occasions act with craft and *élan*, following out as closely as possible the tactics of savage tribesmen. Officers and men alike should be athletes, good climbers, fast runners, and able intelligently to understand the rôle they are about to play for the instruction of their comrades.

While touching on the subject of savage warfare (India) I would here call particular attention to the two divisions, in which such operations may be divided, as particularized in the Journal U. S. I. India of October 1893, *viz*: (1) Campaigns undertaken to defend our position and uphold our prestige in India (*e. g.*, an overwhelming coalition of tribes on North-Western Frontier acting as screen to invading army of a European Power) and (2) Punitive expeditions; for not only is the strategy of a campaign affected thereby, but the actual tactics of the battle field may be modified accordingly as to whether we are engaged in class (1) or (2). This should, I consider, be embodied in the suggested Indian Appendix before alluded to, and be impressed on all commanders as part of this year's instruction.

I will not go to the length of drawing up another synopsis of manœuvres &c., for this year; but where owing to local circumstances a regular campaign cannot be arranged, I would suggest that for each portion of the year's training, similar orders should be issued, and the work carried out in the same methodical manner both in the hills and in the plains. At least one regiment of

native infantry, should yearly be brought up to the hills from the plains in each District, to take part in the Concentration, otherwise our native troops, except those located in the hills, get no practice in mountain warfare.

In some Districts, Rawal Pindi for instance, the country lends itself well for a regular fortnight's campaign across the hills ; and when this is possible it might be carried out in lieu of disjointed manœuvres, as is only possible by reason of expense during the 2nd year. To explain what I mean ; take for example the Murree Hills. I would concentrate the force, say, 3 Mountain batteries, 1 Company Sapper Miners, 3 Battalions British Infantry, 1, Battalion Native Infantry, at Gharial-Topa, Kuldunna, and Cottons Folly ; (vide sketch marked C.) and operate northwards in 3 columns via Dewal, Changla Gully, and Sujkot, across the hills, which north of the watersheds running East and West from Changla Gully marked A. B. C. on the sketch, might be supposed to be enemy's country. The limits of operations could be well bounded by the river Jhelum on the East and the old Abbotabad road on the West, giving an area of 12 miles in width ; The main objective (marked, D. E. F.) being the ridge running East and West from the high mountain of Mian Jani, 14 miles from Murree as the crow flies ; The Haro, Bakot, Dewal and Kalabun valleys, and the ranges of Ghora-Dhaka, Baragully, Kalabagh, Muchpuri etc., being all occupied by the enemy. The Base of operations would be Murree with an advanced depot at Changla, (where there is a Commissariat bakery and butchery.) Water is obtainable most years all over these hills, and there are innumerable sites for bivouacs. The crops are few and far between and need not be interfered with, and provided a proper season is selected the whole force could operate without tents.

A skeleton enemy of 300 selected hill men of N. I. regiments with 4 or 6 British Officers would be required for a Peace campaign of this description, and could draw supplies from Bara Gully bazaar if due notice were given to the Civil Authorities.

Doubtless similar operations could be arranged in the hills around Landour, Dalhousie Nynce Tal, Kirki, Wellington &c. but I am not sufficiently informed to say for certain. This is but a suggestion ; a novelty in Peace Manœuvres no doubt ; but one I think that, while not being expensive, would give the most practical and interesting instruction in mountain warfare against savage tribes to our troops.

Anyhow whether the manœuvres are carried out as one campaign, or have to be of a more disjointed nature, the training during the 1st period should embrace the following, for although not confined to the limits of Attack and Defence, they are practical instruction for troops "in the presence of, or within striking

FROM

FROM

MURRE

BRAYAL EIR

1875

1875

1875

1875

1875

distance of the enemy." Marches through hills occupied by the enemy; Lines of Communication; Transport loading and care; Convoy duties; Advanced and Rear guard actions; Attacks on villages, passes, heights, sungars and stockades; Defence of Camps, bivouacs, shelters, entrenchments, obstacles, sungars, stockades, bridges and rafts; The passage of rivers; Outpost duties; Night marches; Night attack and defence; Reconnaissances and the combined working of aural and visual signalling. The above heading as regards "Mountain Warfare as applied to India" have so lately been thoroughly threshed out in the two essays of 1893, that it seems but mere repetition to discuss them here; still I will endeavour as concisely as possible to particularize some of the points, giving chief attention to the actual tactical training for the attack and Defence.

Marches: If the preparatory training has been properly carried out, every corps should by the time the manœuvres commence, be able to do their 20 miles on hill roads and 12 miles across country with ease. Hill climbing is a mere matter of wind and training, and provided the former is sound, the latter should be easily accomplished. Throughout the area of the operations, all marches should be made as if in an enemy's country; heights should be crowned, flanks thoroughly searched and protected, and the pace regulated so as to keep the column compact. Twelve men of the skeleton enemy judiciously and energetically employed will keep the eyes and ears of a brigade on the march well open.

Lines of communications and convoys: I would propose that all supplies sent by the commissariat from their nearest godown to the camp or bivouac of the force, as well as other stores etc, should be despatched under convoy as would be done from the base on service; and small fortified posts should be established along the line as is done in our little wars. The skeleton enemy will be able to exercise their skill in attack on convoys. Limits as to delays will of course be necessary, to ensure timely arrival of the day's provisions, but the Umpire in Chief will gather from the daily reports of the "officer commanding savage tribes" and officer commanding convoys, whether the duty has been properly carried out.

Transport: an officer of the Commissariat Department should be specially attached to General Officer Commanding District's Staff and detailed during these manœuvres to report on loading, marching, and care of transport animals. The whole plan of a hill campaign depends so much on the transport, that it is most necessary that the General Officer Commanding should know if every corps is perfectly trained in the duties.

Attack: I have already suggested the embodiment in our drill book of hints and precepts for dealing with savage tribes on our frontier, and would, while discussing tactics for attack in hill warfare, premise my remarks by calling attention to the 12 precepts enumerated in the Journal U. S. I. India for October 1893; which should be considered when forming any plan of Attack in the hills. Attempts to lay down normal formations for the attack in hilly countries are even more out of the question than for the plains; but to make my proposals more definite and practical I will give one or two examples of how tactical training for the attack and defence might be carried out during these manœuvres.

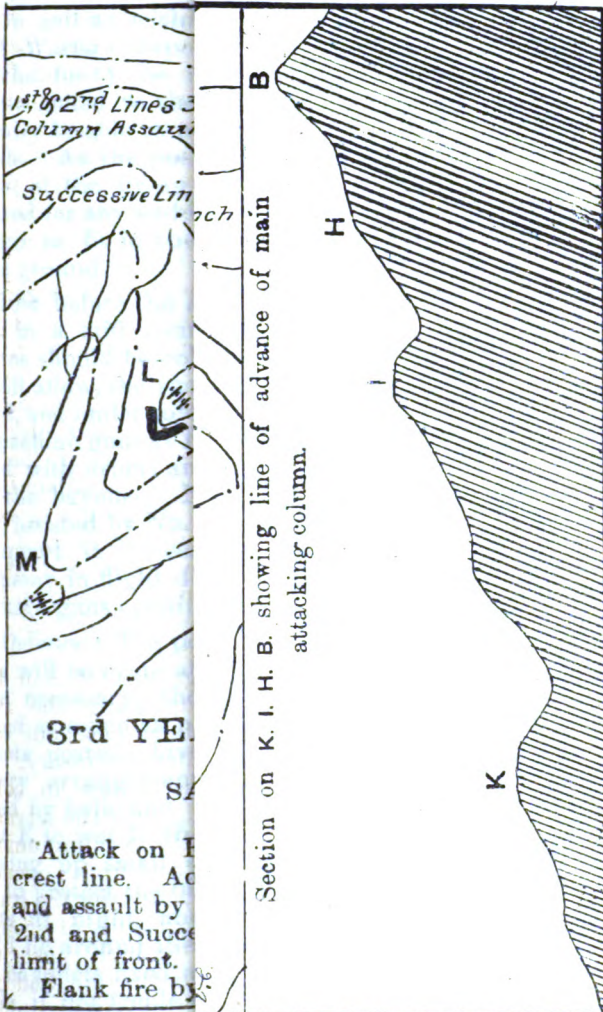
A piece of country similar to that given in plan marked D has, we will say, been selected for practising attack against savages in mountainous country. The skeleton enemy takes up a position on the range of hills marked A. B. C. D., with sungared post at C and small sungars at A. B. E. F. H. I. L. his line of retreat being D.

A force consisting of 2 Battalions with two machine guns, and 2 mountain batteries is ordered to take possession of the range and bivouac there for the night, keeping up communications with the Base, 2 miles South of K.

Spies report that C is strongly fortified and the hill side rugged, steep, and bare beyond E. The O. C. attack decides to assault by spur running B. K. and turn the right of the main position at C. 4 Companies Infantry and one Mountain Battery are directed to proceed up spur G. F. E. keeping a good look out towards the East, and to push forward and occupy E, if possible before the main assault commences. One battalion, 2 machine guns, and 3 Mountain battery guns form the main attack up K. B; and 4 companies and 3 mountain guns proceed up M. A. (their left is protected by native allies, or our troops.)

Each party covers its front by small groups of 3 or 4 men who, followed by their supports, push up along the ridges, under cover as much as possible, keeping a sharp look out to the flanks, and leaving a small group to watch where necessary. They thus cover the advance of the remainder who follow in column, sections, or files, as best suited to the ground, until the advance is checked by fire from the Sungars L. I. F. Helio communication takes place with troops on the other ridges, and fire is opened on the Sungars by selected sections if necessary, and by the guns on the adjacent spurs. From this point the groups of scouts are strengthened into a "firing line of groups" which push on by alternate portions, seizing points of vantage as they go, and covering the advance of the rest. Volleys will be chiefly used, unless the enemy come down with a rush when independent magazine fire will take place, and the supports will at once move up. As the firing

D.



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line advances, should the enemy open fire from above, every opportunity should be taken by supports, reserves and guns to cover their advance with flank or overhead fire. On no account should the advance be hurried as the men will want all their energy for the final Assault. Artillery will make use of each, available position such as G. F. H. I. K. L. M. to assist the attack.

On getting within effective range of the defence, (which in actual Warfare depends greatly on the number of stolen rifles with the foe!) the reserves must open out into groups or line, as best suited to the ground. The 2nd and successive lines will generally be able to advance in Column of Route, if line is impossible. As the position is neared from 300 to 200 yards, the groups of the firing line should keep well in touch, so as to be prepared for any sudden charge; and should at the same time manage to fit in their halts etc., with the natural cover provided by the ground.

Just before the Assault which may be from about 50 to 100 yards in a stiff country, the 1st and 2nd Lines of 2nd and 3rd columns should be collected in as compact order as the enemy's fire will allow, the successive Lines not being more than 100 yards behind, and under cover of the fire of mountain guns at L. I. and E., and machine guns at H. or L. and whole of No. 1 column at E., they should with drums and pipes playing rush the positions A. and B. with the bayonet. No. 2 column will then assault C. from the West, assisted by No. 1 column at E; while No. 3 column remains to support it if necessary, and concentrate its fire on parties of the enemy in flight down the northern spurs, the machine and mountain guns opening fire from B and E.

Defence: The position at C having been captured, arrangements will be made at once for night defence, picquets thrown out where necessary, though at night outlying picquets should be avoided as much as possible; water supplies reconnoitred and water picquets posted; bivouacs and transport lines marked out, and sanitary arrangements completed. Communications should be opened by helio and lamp with the Base, and if necessary a post left at E to watch the east. Every endeavour should be made by throwing up small earthworks, and clearing jungle and trees in front to protect the bivouac from the annoyance of sharpshooters, bullets at night, and the chance of a "rush." Inlying Picquets should lie around the bivouac, behind earth or stone works, with their bayonets fixed and rifles along side them. Sentries must be double, if not treble even, remain perfectly still, and trust to sense of hearing as much as to eyesight. Unnecessary firing must be strictly forbidden as it only disturbs the rest of the troops.

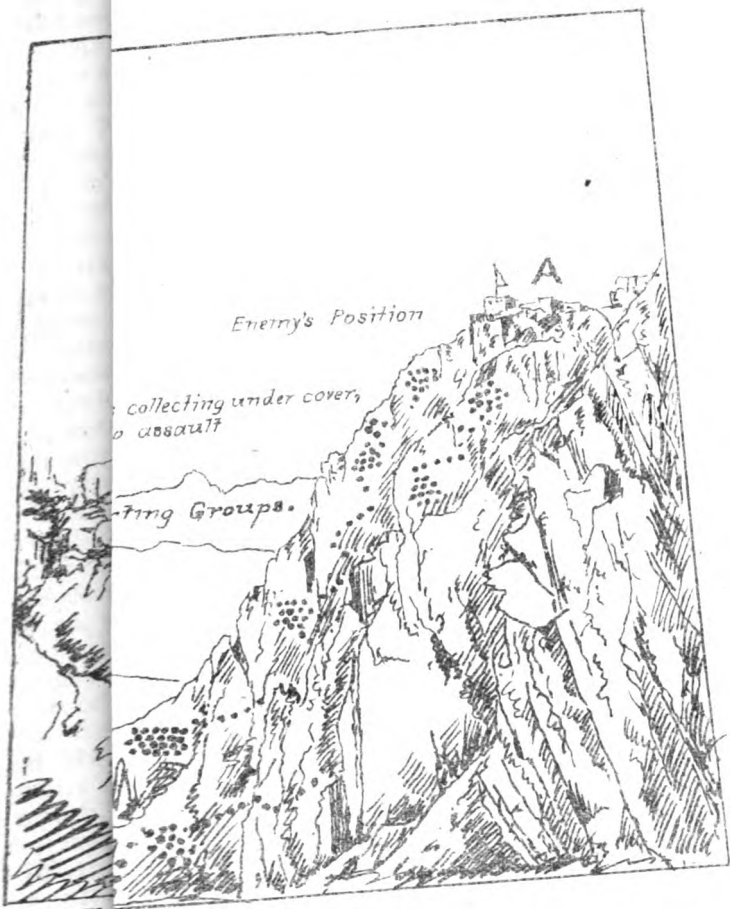
The skeleton enemy will employ themselves by firing into the bivouac as soon as it gets dusk, creeping up and endeavouring to loose the transport animals, or to rush a weak point in the defence (care being taken that opposing sides do not come into actual contact.) At 9 P.M. hostilities might cease and the days proceedings be discussed round a Camp fire where the Umpire in Chief would preside over the assemblage of officers of both civilized and "Savage" forces.

On another occasion an attack and defence of a position such as given in sketch marked E. might be practised. In this case it being supposed that it is impossible to attack the enemy at A from a flank, either owing to the nature of the ground, or to the delay it would cause, a frontal attack would therefore be necessary. The open country intervening between A and C would have to be crossed by a strongly supported firing line by rushes; during which time a heavy fire from C and latterly from men entrenched at B would be kept up on the defenders. The greatest loss may be expected between F and E, and on gaining the summit if the enemy remain in their stronghold. During the actual steep ascent it will be difficult for the enemy to bring an effective fire on the assailants, though in real Warfare falling rocks hurled from above would be certain to cause loss. The men must scramble and creep up to near the summit as compactly as the ground will admit of, though here and there they will have to go in single file; and should collect in as big groups as possible near the summit, under cover, so as to have a succession of supporting groups behind and on a given signal rush the position. The covering party (3rd Line) at B should as soon as the assault appears successful, follow on; but if there be any chance of a repulse, they must cover the retirement by a steady fire, care being taken that it is not directed on a *melée* of friend and foe. The position gained, it should be entrenched and sungared where necessary, and held as in the former example.

In addition to Attack and Defence of actual hills, passes, heights etc, I would suggest that attacks through thick jungle and forests, across nullahs requiring bridging and across rivers requiring rafts should be practised. The trees in many of our hill cantonments are thinned out and felled year by year by the M. W. D. coolies, but on these occasions they might be marked in selected spots by either the executive engineer (or forest officer where not in cantonments) and troops exercised in felling trees, and in constructing shelters, bridges and rafts. *Mushks* should be supplied by the Commissariat Department for practice in *mushk* rafts.

With regard to Advanced and rear guards: in places where the forest or jungle is thick I would recommend the adoption of the plan suggested in the Journal U. S. I. India of Oct. 1893, viz, that

E.



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of dropping stationary files, from front or rear as the case may be, who watch the flanks from concealed posts, and eventually join the head or tail of the column according as to whether the force is advancing or retiring.

During the fortnights instruction in the hills, there should be at least two night marches; one by the roads and one across country. Any one who has had any experience of night marches especially in an enemy's country knows what a very difficult operation it is; and yet sometimes a very necessary one even in the mountains. Night marches have been made by our troops on frequent occasions on the N. W. and N. E. Frontiers, in Afghanistan, and in Nepal, and without doubt they will be made in the future; therefore our troops should be trained as far as possible to make their way across hills and valleys, slowly and quietly, guided by stars, compass, prominent features of the landscape, and perhaps a paper track laid by the advanced guard points. Each of these marches should be made with an objective, for instance the attack of a stronghold. On one occasion the attack might be made at night, a necessity that is *possible* though not probable on service, and on the other the attack might be delivered at dawn, a more usual occurrence. These night operations would give ample opportunities to the skeleton enemy.

Reconnaissances by large and small parties should be practised; and sketches and reports sent in *on the return of the party* for immediate information of O. C. Force. These parties must avoid being entrapped by ambushes laid by the skeleton enemy.

The Second Period of the 3rd year's training will take place in the plains, probably in the vicinity of the Head Quarter Station or when possible in the jungle and scrub at the foot of some hills.

During this Period I would augment the "Savage Enemy" by the addition of a Squadron of native Cavalry; and include among the troops engaged both British and Native Cavalry, wheeled Artillery and Mounted Infantry. The same system will be carried out as for the first portion, but the area of operation will extend over a much wider stretch of country. The following might be practised: Attack on stockades in dense jungle: Attack on a large coalition of tribes on a plain fairly open but cut up in parts by ravines and covered with patches of jungle: Defence of convoys and camps: Building stockades, bridges rafts etc: Forming wheeled transport into "Laager": Night marches, ambuscades, and night attacks.

It is not always possible to find within easy distance of any Cantonments an impenetrable jungle such as we are accustomed to in Lushai and Burmah; but there are near most of our stations areas of jungle land cut up with ravines, and over grown with grass and bushes, that lend themselves fairly well for purposes

of instruction. For instance given a piece of country similar that shown in App. F, where the jungle is fairly thick and cut up by ravines, but not "impenetrable." For purposes of instruction this tract of land may be considered to be almost impenetrable, i. e. any formed body moving through must either cut path ways or follow the native tracks. The tortuous foot paths can be well shown for the time being by laying a few paper tracks early in the morning. They should be so laid that they debouch in the vicinity of the objective, which can be a stockade made of branches and marked with 4 flags, fairly well concealed but with open space for from 50 to 200 yards around.

The Officer Commanding attack (say a small force of 400 men) is directed to rendezvous at A (see plan marked F). He then receives written instructions as follows :—"It is reported that a body of the enemy surmised to be about 1000 are in possession of a stockade about two miles to NE or NNE of A. As this is the route the expeditionary force will take in the evening, Officer Commanding attack is directed to seize this stockade and clear the jungle of the enemy. Enemy's retreat will probably be to W of stockade in direction of C, and their flight should be intercepted if possible. Spies report the jungle impenetrable for formed bodies, but that certain tracks wind through it and debouch in neighbourhood of stockade. The jungle is infested with small bands of tribesmen armed with matchlocks and a few rifles.

The Officer Commanding at once throws out his advanced guard of say $\frac{1}{2}$ company formed as follows : an advanced point of 5 men, with flankers of 10 men each to examine the jungle on each side, all selected men. They are ordered to proceed at a very slow pace, not more than 2 miles an hour ; and should the flankers not be able to keep up with them, the system of dropping stationary points to flanks will be adopted. The advanced point is followed at about 30 paces by connecting files (4 men) behind whom at about 50 paces follow the vanguard ; The main body being about 100 paces behind with intervening connecting files and flankers if necessary. The rearguard of the same strength and composition as the advanced guard forming the tail of the force.

Arriving at D the advanced point reports divergence in tracks to right and left. O. C. proceeds to front and decides to despatch 1 Company (Left Column) to the left, which track he presumes will lead to the W of the Stockade, with orders to advance silently and not to attempt an attack on the stockade unless he receives further orders or it becomes absolutely necessary, but to attempt to intercept the enemy on the road to C. Commanding Officer arranges to signal by flag or helio if possible, if not by bugle sound (regimental call) when he has arrived with the Right



Column in position to assault, so that the Officer Commanding Left Column may know his whereabouts. The three companies forming the Right Column proceed along route leading N. W. and then N. E. About $\frac{3}{4}$ mile further on the advanced point is fired on from an ambuscade at E on their right, but being at once supported by the vanguard, dislodge the enemy from the right of their position by threatening their rear. The tribesmen however escape under cover of jungle and arriving at F., Officer Commanding decides to take the track running West, and on approaching G. is fired on by parties of men in the jungle. The point and flankers halt under cover and the vanguard doubles up, when heavy firing is heard from the west on their left front. Being uncertain whether this fire proceeds from the enemy or his detached company, Officer Commanding proceeds cautiously with decreased distances and strong flankers. At G. he finds an ambuscade deserted and meets the right flankers of the left column who have proceeded by road D. H. on the presumption (a likely one) that D. I. led too much to the south, and met the enemy near G. Officer Commanding attack having thrown out points on both tracks L and M decides to advance with the Right Column by L and sends the Left Column by H. N. across a deep nullah, with orders to work up the left of large marsh discovered at Q. On arriving at P., Officer Commanding attack finds that three tracks branch off, and on consulting his bearings determines to take that leading to R. which he finds leads into fairly open country. From this point he advances in skirmishing order, when he shortly gets news, from a group of scouts, that the stockade has been seen on a small knoll to N. E. This rather upsets his calculations regarding his Left Column; so he halts at R under cover, with his flanks well protected, half an hour, to give time for Left Column to get round by the nullah. Officer Commanding Attack then makes his dispositions to attack the stockade from the East, and advances $\frac{1}{2}$ Company in extended order at 2 paces, closely followed by its other $\frac{1}{2}$ Company as support, with the remainder in Column behind. When at 100 yards from the stockade he assaults it with 1 Company (firing line and supports, now blended) in line, followed by a second company, the third company being kept in hand. Not being able to see any signs of the Left Column, he sounds the regimental call, which Officer Commanding Left Column hears on his arrival at K. and therefore knows that he is well to S. W. of stockade, and at once pushes up very quietly till he comes on a track leading cross-wise where he forms an ambush hoping to entrap the retreating enemy.

This is all presuming that the savage enemy remains in position at B; but he *might* draw the force on in that direction by decoys, and hiding in nullah north of I, fall on the rear of both

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Columns. In fact all sorts of variations for instruction might be made over even a small area like this by an enterprising "savage enemy."

The above is but a rough idea of how training in this sort of jungle warfare may be obtained. It is not purely theoretical, as very similar days were worked under Brigadier General Kinloch in '92-93 (with a skeleton enemy as before described) using the paper tracks, which were laid an hour before rendezvous of the force by "Officer Commanding savage tribes." These days were admitted by officers and men alike to have been most instructive, and moreover, they were interesting as well, being not unlike our frontier jungle experiences, and a change from the beaten track of parades and drills.

The following day of these manoeuvres, the Force (consisting of say $\frac{1}{3}$ of troops concentrated) having advanced through the jungle of the previous day's action, and bivouacked in the vicinity of B for the night, advance at daybreak in the direction of C and form a junction at A (vide plan marked G) with the remainder of the troops who have been similarly instructionally employed about 5 miles or so to the S. W., through a like jungle but with say a cart track through it. The objective of the whole force will then be C, a village about 10 miles to N. W., through open grass jungle with small bushes.

The front of the force is covered by a screen of Cavalry, who report that the enemy's cavalry about 600 (skeleton of 1 squadron) have been met and driven back. The following written information might then be given to General Officer Commanding Force, viz: "The tribes are reported to be collected in large numbers in the vicinity of C. with the apparent intention of attacking the force on its march from A. The strength of the enemy is reported as 5000 with 30 standards and about 500 horsemen; the whole armed with matchlocks, spears, swords and a few rifles. Endeavours are to be made to engage the enemy in the open, and to inflict severe losses on them."

The General Officer Commanding will then determine on his plan of operations; they may be one of the following: (a) To advance his whole force, baggage and stores, etc. and be prepared to attack the enemy wherever found, either (1) in square with the transport inside or (2) in square, or in line 4 or 2 deep, or in echelon, with his baggage left a mile or two in rear with one battalion, 1 squadron, and 6 guns as guard; or (b) to take up a defensive position the open and await the enemy's attack.

Acting on the principle that when dealing with Orientals an active and pushing plan of campaign is always preferable to passive resistance, he determines to adopt (a) (2) viz; to advance with 2 battalions of Infantry, 2 machine guns, 1 Company Mounted

2
my.



Infantry, 3 Squadrons Cavalry and 6 guns and fight the enemy wherever found, leaving his paraphernalia behind at A in a defensive position until ordered to follow on.

With a wide screen of Cavalry covering his front the General Officer Commanding advances across the plain, say in the following formation : Infantry in oblong square 2 deep, 6 Companies front and rear faces. The Artillery with Cavalry escort and Mounted Infantry on right flank, Cavalry on left. The enemy is discovered by the Cavalry, collected in large numbers advancing South East from C. A. large number of horsemen being on their right, and Infantry scouts on their left. On arriving at B. fire is opened by enemy's scouts on the square, and large masses of men are observed halted among the scrub well within Artillery range. The General Officer Commanding however, acting on previous experience, does not to make use of his guns at this stage, wishing rather to encourage the enemy to attack him in the open ; which, if scattered by shell fire they would not probably do, but would disperse and devote themselves to harrying the advance of the troops, attacking convoys and firing into camps at night. The square advances in quick time, a halt being made now and then, when decisive ranges are reached, to fire volleys by half companies or sections. The enemy emboldened by their comparatively slight losses determine to attack, and under cover of fire from their left, their swordsmen rush on to the charge eventually surrounding the square on all sides. The Cavalry remain on the left flank slightly in rear, and the Artillery and Mounted Infantry in rear on right flank (with Cavalry escort) or if desirable, (and as recommended by some in authority, though I think unwise,) the guns may be moved into the square. Now is the time to inflict heavy losses on the advancing masses of the enemy. The guns open with rapid fire bursting their shells well to the front, and firing case when necessary ; the square as the masses arrive 300 yards off open with rapid fire, magazines being used when the enemy gets to within 100 yards or so (if he ever does); should the attack be very determined on one point and but slight on another, the rear rank of the lightly pressed companies might be formed up as a third rank to resist a hotly pressed charge, machine guns being turned on to the foe where the masses are thickest and the charge most determined. The guns and Infantry will keep up a heavy fire on the retreating enemy when the Attack has been repulsed ; the Cavalry taking up the pursuit on a given signal, when the Artillery will be warned that the Cavalry is pursuing on the left.

The Force will then continue its movement in the direction of C. advancing now in say echelon 4 deep, with frontage of 6 companies, and the front of one company on either flank. This *Manceuvre* is performed on the march by the rear face of the square

doubling up on to the front face, the flank companies forming outwards to the front and rear companies closing on leading companies. While in this formation (echelon 4 deep) if attacked on all sides by the enemy, the flank companies form half right and half left and close on the flank of the line, the front companies open out to 6 paces from the rear companies, mounted officers move in between the companies, which at extremities of flank companies close so as to fill up the gap.

Now to change sides, let us observe the tactics of "savage enemy." When no longer under fire from the square, they collect in groups in broken ground and open fire on pursuing Cavalry which acting under orders retires in rear of its infantry. They then retire towards village C, a few hundred matchlock men keeping up fire on the advancing echelon and as they near the broken ground a party of some 500 swordsmen conceal themselves lying flat on the ground, in nullahs and behind shrubs, to the left front of advancing echelon; their horsemen, which have been driven off by the Cavalry from their right have now collected under cover to their left, behind a small copse and thick jungle patches; meanwhile the retreating parties going towards the village still keep the attention of the attack on them by keeping up a dropping fire. These two concealed parties of the enemy watch their opportunity and as the echelon nears the ravine fall simultaneously on both flanks shouting and yelling as they charge.

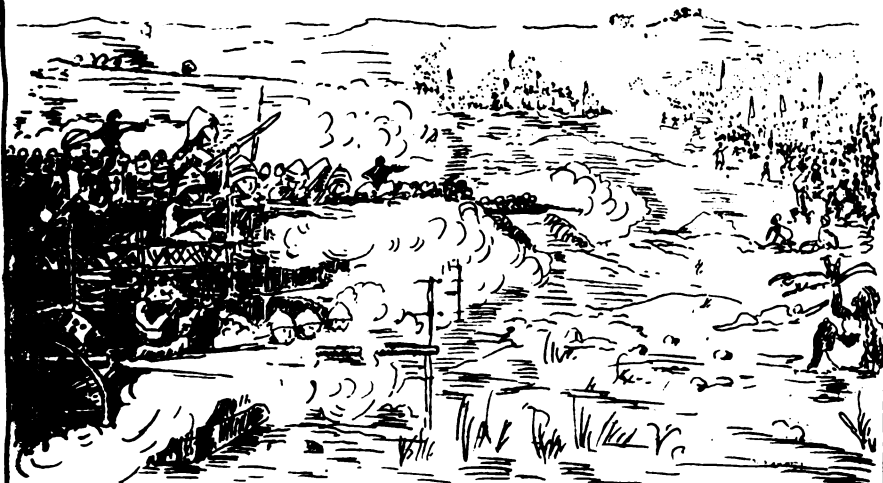
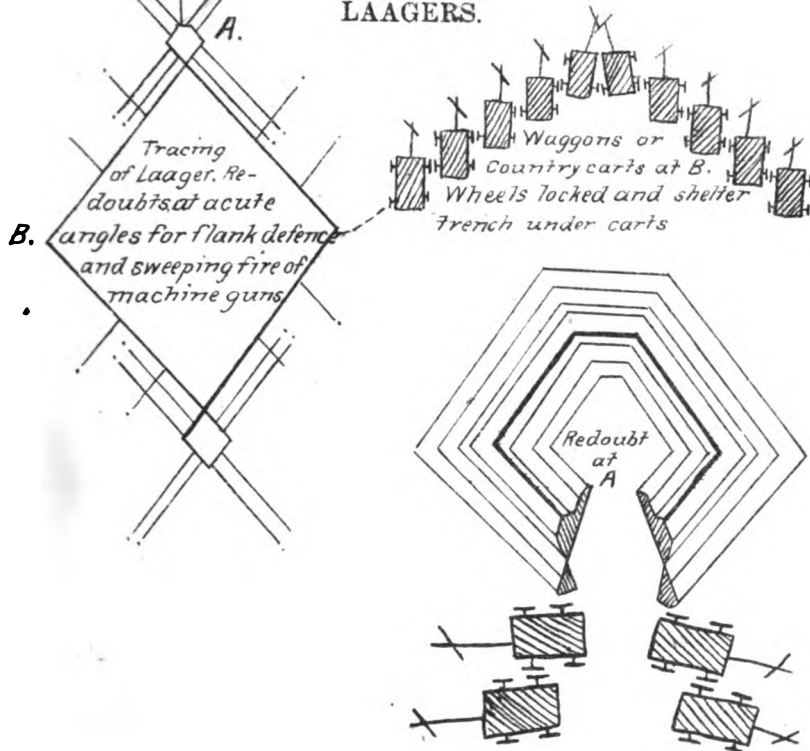
G. O. C. at once closes up the flank Companies as above described, the Artillery come into action on the right the mounted Infantry push round to right to cut off retreat to the north, and when the assault is broken the cavalry charge down on both flanks of the Enemy. The pursuit is carried on for some 3 miles beyond C towards the hill, the Cavalry and mounted Infantry pressing on ahead with 3 guns. The village of C and jungle round is cleared of the Enemy, and the baggage having now come up, in accordance with orders sent back from B, the force halts for the night forming a laager of waggons (with shelter trench underneath) round the advanced faces; entrenchment and parapet of camel saddles, stores &c., round rear faces, and small redoubts at the acute angles for flanking fire. Transport and horses in the centre, in close formation with heads inwards, (For plan of Indian Laager vide H.) Either on this night or the one following, or early one morning when about to arrange for onward march, an attack by savage enemy might be made on this laager.

The above is but a rough idea of how instruction in warfare against savage tribes in open jungle such as the plains of the Soudan, Afghanistan, and Persia, may be obtained during this

3rd YEAR—2nd PERIOD.

SAVAGE ENEMY.

LAAGERS.



Flank of Laager of Indian country carts; showing defence against attack by Savage Enemy

third years' training. As will be gathered from the above a great deal on these occasions depends on the energetic and "crafty" handling of the skeleton enemy, but if carefully worked out the "Officer Commanding Savage foe" should be able to give a very instructive and realistic touch to the manœuvres, which while making them essentially practical, will at the same time keep the troops keenly interested and on the "*qui vive*." The on-slaught on line or square should always be made in "crowds" not in parade formations, and the horsemen should always swoop down in "swarms" at the most unexpected moments and places, and disappear as quickly as they came. The sudden onrush of a yelling horde of may be but 100 or 200 Ghazis on service is apt to paralyze for a moment the best of troops, *if* they have never been accustomed to such tactics on the part of the enemy; and on more than one occasion a handful of Ghazis have created a panic among well drilled and disciplined troops, who had they been accustomed and *trained* to meet such attacks, would in all probability have kept 50 per cent cooler and steadier than they did, being, as they were, unused to such fighting either in Peace or War Manœuvres. We cannot undertake to provide Frontier or Soudan expeditions for all our troops with any regularity as a triennial training! Therefore the next best thing, *viz* Peace Manœuvres should surely be at all events partly devoted to this purpose.

I have now as far as the limited space of this Essay allows, sketched a rough outline of how I consider the tactical training best fitted for preparing the army of India for war against civilized enemies, or against savage tribes in mountains and jungles, may be best obtained at our District Concentrations. These Concentrations last approximately 4 or 5 weeks and it is with reference to the 1st year and the time thus employed during the 2nd and 3rd years that I venture to suggest the above detailed system of training; which, it should be noted, need in no way interfere with ordinary Field days during the drill seasons, which can of course be arranged as against civilized or savage foes, accordingly as the General Officer Commanding considers is most required by the troops under his command. The proposals put forward have with the assistance of a few sketches and detailed schemes been made as definite as space will allow; while the practicability, which really resolves itself into a matter of cost, has been shown to be quite feasible, and moreover leaves a balance credit to Government after 10 years, even while throwing in what every one, who has given the subject of mobilisation a serious thought, considers most necessary, *viz*: a rehearsal of our existing paper mobilisation scheme.

That our present system of training, and our present books are incomplete without the necessary instruction of our army in India in the tactical requirements of "India's little war" is palpably apparent. Therefore in addition to the preparation of our troops for the great struggle with a civilized power, we have before us as a possible and probable drama of the future, I have endeavoured to show how the more present needs of tactical training for War against the many turbulent forces of our Empire's bulwarks, may be obtained, without at the same time neglecting the preparations for the coming "Struggle with the East"; So that by a judicious combination of the two, we may be prepared for all emergencies great and small, and "blast of war blows in our ears," whether from North, South or West, whether a hurricane from off the shores of Africa or a breezy zephyr from the recesses of our rugged borders, we may, to use Bugeand's metaphor, know the proper sail to set to each wind and how to set it.

Month.

Monday, 1st

SUGGESTED.
ALTERATIONS IN CAVALRY DRILL VOL. II.

BY CAPT. W. W. NORMAN, (2ND P. C.)
COMMANDANT ZHOE LEVY CORPS.

Introduction.

In presenting this paper to the United Service Institution, I must apologize to all Cavalry officers for proposing alterations in the existing drill. I would however ask for a slight hearing through the medium of this Introduction, and if, after it has been read, they will do me the favor of reading through the drill book with my suggested alterations in hand, I hope to prove that I am no vexatious theorist, but that my proposals tend solely to lessening the task of instruction by officers, and of remembrance by the rank and file. I do not forget that I have been an Adjutant, and in my present appointment I am still an instructor. I know the difficulties and have no wish to add to them. I am however convinced that the very slight changes I propose will be of use. I would here state that every single suggestion has been carefully tested. The men of my Corps are trained to the drill as altered by me, and I have found that it is readily learnt and works well.

A few words of explanation are necessary as to the alterations proposed. To commence with I must point out that Troop and Squadron Drill alone are affected, and in them the following changes are suggested.

1st The abolishing of "Column of fours." This form of column is not required except for such purposes as taking ground to a flank for a very limited distance, such as to allow one troop to close on another troop, or to correct squadron intervals; to allow of such movements I have made provision (see page 181 last para).

2nd. Column of fours being abolished the only forms of column necessary to be retained are, column of sections, of half-sections, of single file.

3rd. Each section is looked on as a small unit subdivided into two half-sections, each of the latter consisting of two files.

4th. The Section, being a small unit, must always remain intact, that is, always be composed of the same two half-sections; as long as this intactness is maintained, it is immaterial what the position of any particular section may be in the troop, that is, it may at one time be on the right flank, at another on the left flank or possibly in the centre.

5th. Similarly the two half-sections of each section may, while always remaining present in the same section, continually

change places, sometimes one and sometimes the other being the right half section, and *vice versa*.

6th. This principle applies still further to each of the files in each half section.

The above may all appear a hopeless muddle but it is in fact a perfect system of transposition, and all I have done is to adapt the system of regimental drill to troop drill, for as it is of no consequence as to where a particular squadron may be located in the line, so it is immaterial what the position of any particular section may be in the troop. Similarly with half-sections and files in their sections and half-sections.

The following example will I think show what I mean.

Ex.—A troop consisting of 12 files *i.e.* of 3 sections in line. Give the Command “Advance by single file from the Right.” “Walk March.” After the column has been formed or partially formed, give the command. “To the Halt, on the right form.” This is one of my words of command and notice the result. The right flank section has become the left flank section, and *vice versa*, the centre however remains the same, but in each section there has been a further upset for each half section has changed places and in each half-section each file has changed places. Though there has been this great upset, it will be noticed that each half-section and each section is intact.

Now the above is perfectly possible if we abandon the system of numbering off; there is no necessity for it. It is of course necessary to number off when the troop is first formed, but after the flanks of sections have been proved, men are at liberty to forget their number; all they have to remember is that they belong to a certain half-section, which is part and parcel of a certain section, that as long as they keep together in their half-sections and sections, it is immaterial what the position of their section in the troop may be.

Now to go a step further, which brings us to a great simplification of drill. Having abolished the system of numbering off, and treating the section as a unit, or properly speaking as a sub-unit, we can dispense with the terms right or left in front, inner and outer flank, as far as troop drill is concerned; all this is perfectly possible as a reference to my suggestions will show.

The drill as proposed by me consists of only a very few simple movements and words of command. The chief alterations are.

- 1st. Column of fours abolished.
- 2nd. Numbers, and odd and even files, abolished.
- 3rd. The terms inner and outer flank, also right and left in front, abolished.

In place of these the following system has been adopted.

1st. The section to be treated as a sub-unit, this principle extending also to the half-section.

2nd. Column of route to be only by sections, half-sections and single file.

3rd. Advances in column, whether from the right or left flank, to be performed as laid down in the Cavalry Regulations.

4th. Formations from Column into Line to be treated on one general principle, the command being simply "Form" with the caution "On the right" (or left) prefixed. Formations to a flank, or oblique formations to be treated as frontal formations, the head of the column being first wheeled to the required hand. Formations to the rear being treated as frontal ones, the front being first reversed by the countermarch of sections, etc. etc.

5th. Increase of front always to be made by a left incline of the units in rear, whether the original advance was made from the right or left.

6th. Decrease of front always to be made by an advance from the right flank of units, with a right incline by those who have to follow in rear, whether the original advance was made from the right or left flank.

I think I have now fully explained all my ideas, they can however only properly be understood by those who will favor me with a systematic comparison of my suggestions with the drill book. Before concluding I would however beg to state that by treating the section and half section as sub-units, all detached duties would be much more easily performed.

Suggested Alterations in Cavalry Drill, Vol. II.

Page 197-198. Erase the term "fours."

Page 198.—Between the terms "Blank or Incomplete file" and the term "File Leader" insert the two following terms:—

"Half Section Leader." The senior man in each half section ; he should be a junior N. C. O. or selected trooper, and will take command of his half-section whenever it may be detached as a Cossack post, weak reconnoitring patrol, etc. etc.

"Section Leader." The senior half-section leader of the two half-sections comprising a section ; he should be a senior N. C. O. and will take command of his section whenever it may be detached as a detached post, strong reconnoitring or flanking patrol, etc. etc.

Page 200. In the term "Column of Route" erase the words "a narrower front than fours" and substitute the words "a narrower front."

Page 202.—Line 5 erase the word “fours” and substitute “sections.”

N.B.—Hereafter whenever the word “fours” is met substitute “sections.”

Page 213.—S. 4. paragraph 9. Cancel and substitute:—

9. The men to form each troop and the number of files to be turned out, also the individual composition of each section, having been previously determined, each troop forms on its own parade in double rank as is the custom on service. Non commissioned officers required as serre files and the squadron trumpeter form separate in single rank in rear of the rear rank.

Page 213.—Cancel paras. 10 and 11.

Page 214.—Cancel paras. 12 and substitute:—

12. The troop is next told off by the following words of command:—

“From the right, tell off by sections.” The flank guides and centre guide are included in the telling off.

“Flank of sections, Proof.” While the men are proving, the commander sees that flanks of sections of the front rank are covered. In the case of a troop of 12 files, the files next to the flank guides must be complete. “As you were.”

“Centre guide Proof.” “As you were.”

“Half-section Leaders Proof.” “As you were.”

“Section Leaders Proof.” “As you were.”

“Sections by ranks—Right.”

“Sections by ranks—Right.”

“Guides going to the rear—Proof.” The coverer of the centre guide and two men on the flanks of the rear rank prove. “As you were.”

“Sections by ranks. About.”

N.B.—In a troop of 12 files the centre guide is the left hand man of centre right half-section. In a 16 file troop he is the left hand man of the second section from the right flank.

Page 215.—Para 16 cancelled and for para 18 substitute:—

18. In order to ascertain that the troops consist of the same number of files, and have been properly told off, the squadron leader will give the following words of command:—

“Centre and Flank Guides—Proof” and while they are proving.—

“Flanks of sections—Proof.” “As you were.”

“Sections by ranks—Right.”

“Sections by ranks—Right.”

“Guides going to the rear—Proof” “As you were.”

“Sections by ranks—About.”

"Troop Leaders take post."—The troop leaders take up their proper position in front of the centres of their troops.

Page 227.—S. 9. Para 11 (b). Substitute (b) "From the Right of Sections to the Front File." All halt except the right hand man of the front rank of each section, who continues to march straight forward. The remainder of each front rank section incline to the right in succession, as they get room and fall into file, each at one horse's length distance in rear of their original right flank man.

Each rear rank section follows its front rank section in the same way. Each man, front and rear rank must preserve an interval of 3 horses' widths and the dressing from the centre. The troop leader places himself in front of the centre (or right centre) right of sections. On the Command "Front Form Ranks" the leading man of each section moves straight forward. The remainder incline to the left and form up into line. The rear rank march straight on and form in a similar manner, covering their front rank men at the proper distance.

Page 238.—S. 12. Para. 9. Erase from the words "The radius" in line 5 to the words "inward flank" in line 7.

Page 242.—S. 13 para. 9. Substitute the following diagram for fig 1. (vide plate 1).

Page 252.—S. 14. for para. 1 substitute:—

1. The movements by sections etc, should in the first instance be practised in squads of 16 men in double rank, and at a walk. When the men can execute them correctly at this pace, they should be practised at the trot and occasionally at the gallop. The drills will afterwards be gone through in troops, and finally in squadrons with officers complete.

In para. 3. line 3. Erase the words "Fours" and substitute "sections." Again between lines 6 and 10 insert the following sub para :—
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"The men must be made to understand that it was necessary for them to number off, in order to tell off the different sections, but that when this is once done they have nothing further to do with numbers. It will further be pointed out that Nos. 1 and 2. form a half-section and Nos. 3 and 4 another half-section.

Page 253.—Erase lines 12 and 13 and for para 4 substitute the following:—4. In order to prove the telling off of a body of men, and to enable one troop to close upon another troop, or to enable squadrons to correct their intervals, the wheel of sections by ranks is used. Such a wheel is made upon the flank man of each section, front and rear rank simultaneously, who turns his horse upon the fore feet and the dressing is to the wheeling flank (S. 12 para. 14) Fig 1. (see plate 1).

The words of command are "Sections by ranks" "Right" ("Left" "About" or "Left About,") and the various sections wheel at once without any further word of command, and halt on the completion of the wheel. It will be necessary when correcting intervals, in order not to overshoot the alignment, to incline the column outwards from the alignment thus:—

"Sections by ranks—Right" "Right, incline," "Walk march."

Then when a sufficient incline has been made "Forward" "Sections by ranks—Left" "Halt" "Dress."

(On foot the wheel of sections by ranks is completed in 3 paces, the out-ward flank man taking a pace of about 42").

The interval between front and rear rank sections when in column of "sections by ranks" is four feet. On foot there is no interval. The distance between sections is the usual one of 4 feet except on foot when it is 3 paces.

Page 254.—Para 6. Erase from the words "the interval" in line 8 to the words "6 inches" in line 11. And again erase from the words "there is no interval" in line 13 to the end of the para.

Page 256.—S. 15. para. 1. Erase all line 5 to the words "on the move" in line 6, also from the words "or fours" line 7 to the end of the para.

Cancel para. 2. "By fours." Para 7. "By fours." Para. 11. "By fours."

Formation to the Front, Flank and Rear.

Page 261.—S. 16. Insert as additional paras, the two following, numbering them 1 and 2.

1. Owing to the fact that the section is a unit by itself, it does not matter in the least whether its position in the troop is shifted so long as the section remains intact, that is remains always formed of the same men. In formations to the front, flanks, or rear, it may then often occur without the slightest derangement, that the original right flank section may, after a particular formation has been completed, become the left flank section, and *vice versa*.

2. The word of command for any formation is simply "Form," the instructor preceding the above command with the caution "On the Right" (or "Left"). Thus if the column is right in front, line can be formed either to the right or left of the head of column by the command—

"On the Right" (or "Left.") "Form," similarly if the column is left in front. In formations to the flanks, whether right or left in front, the formation is treated as a frontal one, the head of the column being first wheeled to the flank by the command—

"Leading Sections Right (or Left) wheel" "On the Right (or Left) Form."

In oblique formations the head of the column is wheeled to the required extent before the command "Form" is given.

Formations to the rear are also treated as frontal formations, the front of the column being first reversed by the countermarch of sections etc.

Re-number original para 1 as para 3.

Cancel original para 2 and substitute new para 4.

4. All formations from sections, etc, whether from the halt, or while on the move are done on the move; if, therefore, it be wished to execute any of them to the halt, the caution. "To the Halt" will be prefixed to the command for the formation.

Re-number para. 3 as para. 5 and in line 4 erase the words "except" to "fours" in brackets.

Re-number paras. 4, 5, 6, 7 and 8 as 6, 7, 8, 9, and 10.

Page. 263.—Cancel para. 9. "Form Fours."

In para. 10. Alter the command "To the Halt." "Front Form." "March" to the command "To the Halt." "On the left Form." "March" and number the diagram Fig 1. (See plate 2).

Add as para. 10 (b):—

10 (b) From Sections. "To the Halt." "On the right Form." "March." This formation is carried out as in para 10 (a), substituting the word "right" for "left" in the instructions Fig 2. (See plate 2.)

Page 264.—Substitute for para. 11 the following:—

11. From Half Sections.

The words of command and instruction are the same as for sections in para. 10 (a) and 10 (b) substituting the words "Half-section" for "section."

12. From Single File.

The words of command and the instructions are the same as for sections in para. 10 (a) and 10 (b), substituting the word "man" for "Section."

For paras. 13 and 14. Substitute:—

13. From File."

"To the Halt." "Form." "March" The leading front rank man advances 6 horses lengths (6 paces on foot) and halts; all the rear rank men check their pace until the front rank men of the files next behind come up abreast of them; the whole then incline to the left at the pace ordered, until opposite their places in line, when they square their horses and form in the ranks to which they belong, on the left of those already formed, the leading rear rank man halting at his proper distance in rear of his front rank man. (See plate 2).

Fig 3.

Formations from file to a flank when necessary are made upon a similar principle. A formation to the rear is treated as a frontal formation, the front of the column being reversed by the counter march of files, when each file wheels about.

14. In formations to the front to the halt, immediately on issuing from narrow ways or streets, the head of the column halts and the remainder must turn to the left as they come out of the defile, and march along the rear of those already formed, until they come opposite their places in line.

Cancel para. 15. "From fours."

In para 16. Substitute for the command "To the Halt." "Left Form." "March" the command "Leading Section Left wheel." "To the Halt." "On the Left Form."

Add as para. 16 (b)—

"Leading Section Left Wheel." "To the Halt." "On the Right Form."

This formation is carried out by the leading section wheeling to the left, after which it advances 6 horses' length (6 paces on foot) and halts, followed by its rear rank section; the remainder move straight along the rear of those already formed, until nearly opposite their places in line, when they wheel to the right and form in the ranks to which they belong. (See plate 2)

Fig 2.

For para. 17. Substitute:—

17. From Half-Sections.

The words of command and instruction are the same as for sections in para. 16 (a) 16 (b), substituting the words "Half-Section" for "Section."

For para. 18 substitute.

18. From Single File.

The words of command and instruction are the same as for sections, substituting the word "Man" for "Section."

Cancel paras. 19, 20, 21, 22, and substitute:—

19. Formations to the outer flank are carried out in the same manner as formations to the inner flank, except that the head of the column must be wheeled to the right instead of to the left, and in the case of the formation being ordered on the left of the head of the column, rear sections as they come up opposite their places wheel to the right, instead of to the left, and *vice versa* if the formation is required to the right of the head of the column.

Cancel paras. 23 to 26 and substitute para. 20.

20. Formations to the rear are first carried out by changing the front of the column by the counter march of sections, etc, then treating the formation as a frontal one, as laid down in paras. 10 (a) and (b).

Page 269.—Sec. 17. Erase first 4 lines and substitute "Squadron Counter March" "Sections by Ranks Right and Left." On which the front rank wheels, "Sections Right" and the rear rank "Sections Left" (Fig. 2).

Also erase lines 17 to 21 and Substitute "Sections by ranks Left and Right."

"Halt." On this command the front rank wheels to the left, the rear rank to the right. (Fig. 4.)

Page 269—Section 18. Cancel para 1 and substitute:—

1. In the following instructions it is immaterial whether the column of sections is right or left in front. It is a principle that (a) *in diminishing the front from sections to half-sections, or single file, men that have to follow in rear must always make a right incline whether right or left in front* (b) *In increasing the front, men that have to come up must make a left incline whether right or left in front.*

Para 2. Cancel lines 10 to end of para and substitute—

Thus in diminishing from sections to single file while on the move, the command will be "Advance by Single File," "Rear Halt," when all but the right flank single file of the leading section will halt; and increasing the front from single file to sections while at the walk, the command will be "Form Sections" "Rear Trot", on which all but the leading single file will take the increased pace, resuming the walk on arriving at their proper place in column, and the leading section will continue to advance.

Page 270.—Cancel para. 5.

Page 271.—Cancel para. 7, 8, 9, and for para. 10 substitute:—

10. From Sections to Half-Sections (Right or Left in front "Advance by Half-Sections." "March." The right half-section of the leading section followed by its rear rank section advance; as soon as its flanks are clear the left half-section inclines to the right, follows and covers. The remainder move off in succession in the same manner, right half-sections advancing, left half-sections inclining to the right, following and covering.

Page 272.—For para. 11 substitute:—

11. From Sections to Single file (whether Right or Left in front) the right hand man of the leading half-section, followed by his rear rank man advances; the left hand men of this half section, front and rear rank as soon as their front is clear make a right incline, follow and cover. The remaining half-sections move off in a similar manner in succession, right hand men advancing, left hand men inclining to the right, following and covering.

Para 13. From Single file to Half-sections (whether Right or Left in front) "To the Halt form Half Sections" "March." The

leading man of the column, followed by his rear rank man advances 6 horses lengths and halts ; the left flank man with his rear rank man makes a left incline and comes up into his proper place in the half section. The remainder continue to advance, right flank men with their rear rank men moving straight on and halting at the proper distance, left flank men making a left incline and moving up to their proper places in their half sections, each half-section being formed in succession, from front to rear and taking care to remain in single file, until the half-section in front of them is formed.

14. From Single file to Sections (whether Right or Left in front). As for formations from single file to half-sections, the right flank man of the leading section with his rear rank man advances 6 horse's lengths and halts, the remaining men of the leading section making a left incline and coming up to their proper places in their section. Rear sections continue to advance until their right flank man arrives at the proper distance from the section in front, and halts when the remaining men of the section make a left incline and come up to their places in their respective sections ; each section being formed in succession and taking care to remain in single file, until the section in front of them is formed.

Para 15 Cancel.

Para. 16.—In sub-para. (a) line 2 alter the command "To the Halt." "Form Troops." "March" to "To the Halt." "On the Right, (or Left.) Form Troops." "March."

And in line 4 write 10 (a), 10 (b), for 10.

Para. 17. In line 1 erase the words "Fours" and in line 2 erase the letters in brackets and substitute (S. 16 para. 10 (a) 11, 12.)

Para. 18. Cancel and substitute:—

18. From Half-Section to Sections (whether Right or Left in front) "To the Halt." "Form Sections." "March." The leading half-section followed by their rear rank, advance 6 horse's lengths and halt ; the left half-section in rear with their rear rank men make a left incline and form up on the left of the leading half-section, taking up their places in their section. The half section in rear continue to advance, right half-sections halting at the proper distance from the section in front of them, left half-sections making a left incline and coming up to their places in their respective sections, the whole taking care to remain in half sections until the section in front of them is formed.

Para. 19. 20, 21. Cancel.

Page 295. Para. 12. Cancel and substitute:—

12. When it is required to dismount three fourths of the men, the squadron being in line, the command is given "squadron (or first, second etc., Troop)" "By sections with carbines—Dismount" on which the troop leaders advance 2 horses' lengths, the front rank 1 horse's length; the horse holders, front and rear rank then advance 1 horse's length, the left half-section leaders of each section and their rear rank men make a slight passage to the right, taking up part of the space left vacant by the horse holder. The whole of the men, with the exception of the horse holders, then dismount, after which they dress up into line with the horse holders. The right half-section leaders then hand their bridoon reins over to the horse holder, who at the same time takes over the reins of the left half-section leader, the left flank file of each section passing his reins through the back strap of the left half-section leader, hands them to the horse holder. The dismounted men with carbines at the trail then double to the front and form at close files, 3 horse's lengths in front of the troop leaders horses, rear rank men moving round the nearest flanks and forming on the left of their front rank men; the troop leaders form 3 paces in front of their troops. The men of each section, form a group, being commanded by the section leader as directed in S. 4. para. 13.

The squadron leader, or an officer told off by him, accompanied by the trumpeter, takes command of the whole.

Para. 13. Cancelled.

Para. 17. In line 1 erase the word "fours or " and from "or "in 1 to "numbers " in line 2.

Para. 18. Erase from the words "or odd " in line 3 to "dismount " in line 5.

Para. 19. Erase line 4 to the word "dismount " in line 5.

Para. 20. Page 298, line 1. Erase from the words "In the case " to end of para. and substitute:—

In the case of dismounting by sections, as soon as the horse holders have handed over the horses to their owners, they move their horses up 1 horse's length; the remainder then mount, slightly passaging their horses so as to get room, and dress up into line with the horse-holders and the rear rank when formed dresses up to its proper distance.

Para. 23 and 25. For "odd numbers " read "half section leaders with their rear rank men " and for "even numbers " read "the remainder."

Page 386 Sec. 13. para. 37 and 38. For "fours " read "sections."



Fig.II.

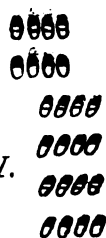


Fig.II.



Fig.III.

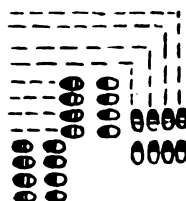


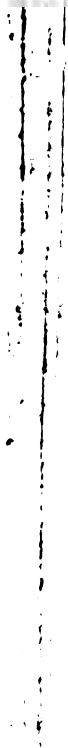
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The Journal
OF THE
United Service Institution of India.

VOL. XXIII.

1894.

No. 118.

ON FACING ODDS.

By Colonel P. NEVILLE, 14th Bengal Lancers.

Delivered as a Lecture in Simla on the 8th October 1894.

We in England are accustomed to boast of our freedom, and well we may, but this very blessing of freedom has, from a military point of view, certain drawbacks, amongst which must be reckoned a voluntary system of military service.

This, it is true, gives us the best of soldiers, for a volunteer is ever equal to two pressed men, but at the same time it tends to limit the total of our fighting force to a minimum as compared with the enormous armies of other countries where conscription prevails.

In the days of hand to hand fighting this disparity in numbers was not so much to our disadvantage as it is now.

Englishmen were very superior to other nations in war, and the reason of this is not far to seek. Whatever may have been the evils of the feudal system as compared with the improved forms of government which succeeded, there is abundant evidence that the commonalty of England lived on more friendly terms with their barons, were far less oppressed, and infinitely better fed than any other people on the continent of Europe. Their stoutness and daring in war was such that they inspired their enemies with a superstitious terror, and it is no vain-glorious boast today, but a simple historical fact, that one Englishman was then counted equal to three of any other nation.

At present the improvements in modern weapons have resulted in making personal strength and courage a far smaller factor in war than when men fought hand-to-hand.

The veriest coward who can hold straight a magazine rifle is more than a match for a Roland or an Oliver.

Must we then despair of success in future wars because of the smallness of our army? Certainly not.

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Let us rather look back on the glorious roll which the page of military history unfolds. Let us note the famous victories won by our fathers against fearful odds; and so long as our cause is just, I, for one, am convinced that we may as confidently look for victory in the future as they did in the past.

We shall now review, very briefly, for our time is limited, some very famous battles all fought facing odds, in which the weaker side were winners, and although we shall begin far back before the days of fire arms, I would ask you to note the same elements of success running as a golden thread through the whole historic fabric—the military skill and dauntless courage of our leaders and the strict and admirable discipline, combined with a dogged determination to conquer, of our men.

Since the time when Norman William took with him British troops to put down his rebellious subjects in Poitou and Normandy, up to the beginning of the 14th century, English kings had constantly interfered in French politics, and the rivalry and hatred between the two countries grew until it needed but the veriest trifle to cause a war with France.

In 1335 Edward III went a step beyond his predecessors and claimed the French throne by right of inheritance.

In this war he was unsuccessful, chiefly because his troops were foreign mercenaries.

In 1346 he again took the field with a small though fine army of English troops and landed on the Norman coast.

Any school boy to-day would laugh at the idea of invading France with 10,000 men, but in those days we thought nothing of it.

Normandy was defenceless. The French were expecting an attack in the south where the Duke of Normandy with a large army was endeavouring to drive the English, who were commanded by the gallant Earl of Derby, from Guienne.

Edward's objects were two-fold. First to relieve Derby by threatening Paris—secondly to cross the Seine and effect a junction with his allies, the Flemings who had already crossed the frontier.

The English army marched to Rouen where Edward intended to cross the river. Philip however was there before him: the bridge of boats was removed, and a French army far superior to his own occupied the right bank.

The English ascended the left bank of the river towards Paris. the French preceeding them on the opposite bank, destroying every bridge and guarding every ford.

At length they arrived at Poissy, 16 miles from Paris.

From thence they raided in the neighbourhood, and St. Germain, St. Cloud, Bourg-la-Reine, and Neuilly were reduced to ashes.

Still, however, Edward's situation was very critical. He was cut off from his allies, the Flemings, and the whole of France was rising to repel the invaders. Now the English king, by a masterly stroke of war, retrieved his fortunes. Having examined the bridge at Poissy, which was only partially destroyed, he saw that it could be easily repaired. He therefore struck his tents and advanced rapidly on Paris, as if to

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THE FIRST BOOK OF THE HISTORY OF THE

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attack the capital. This had the effect he foresaw of making the French cross to the left bank to defend the city. Edward's van reached the suburbs of Paris and opened a skirmish to keep the enemy employed. In the meanwhile the king wheeled round, retraced his steps, cleared the bridge with his bow-men, rapidly repaired the breach, and before the French king was aware of what had happened he crossed his whole army with but trifling loss.

From the Seine, Edward now made a rapid march to the Somme hoping to be able to cross. Philip, however, managed to reach Amiens before him and resumed his former tactics, destroying all the bridges, and guarding every ford.

The French army had by this swollen to the formidable number of 100,000 men, and Philip assumed the offensive.

Crossing the river with 60,000 men, he pursued the English down the left bank hoping to drive them into the sea. So closely did he follow Edward, that he entered Airaines, where the English king had slept, but two hours after his departure.

The same evening the English reached Oisemont and here they found themselves cooped up between the Somme, the Sea, and Philip's army.

Edward now offered freedom and 100 golden crowns to any of his prisoners who would show him a crossing. One Gobin Agace responded and pointed out a place called Blanche Taque which was fordable at ebb tide.

At day-break Edward sought the ford, but found not only the tide in flood, but the opposite bank guarded by 12,000 French under Sir Godemar du Fay.

He waited in great suspense for the tide to ebb, every moment expecting Philip to arrive in his rear.

At last the ford was reported passable and the king gave the order to advance in the name of God and Saint George. The English knights dashed boldly into the water. They were met half way by the chivalry of Sir Godemar and a very fierce conflict ensued. Eventually the French were forced back and the English force made good their crossing.

They were not yet, however, out of the wood for a narrow creek or defile led from the ford up to the right bank and this was held by 10,000 men amongst whom were a detachment of the then much dreaded Genoese cross-bow men.

Directly the flying horsemen had cleared the front the Genoese from both banks of the ravine poured down a terrible rain of bolts on the serried ranks of the English. Edward now ordered his archers to the front, and so deadly and accurate was their aim that each arrow brought down its man. Nothing could stand before them, and very shortly the French were in full retreat.

Edward sent his knights to pursue Sir Godemar, and himself encamped in the fields between Crotoy and Crécy.

Philip now appeared on the left bank, but the tide having again risen he could not cross and had to fall back on Abbeville.

The following day the English raided on Crotoy and sacked the town where they found plentiful and much needed provisions of all sort. They also captured several ships laden with wine which was much appreciated by our troops who of late had fared very badly.

Nothing up to this had been heard of the Flemings; nevertheless Edward, encouraged by his success at Blanche Taque, now determined to make a stand at Crécy and fight the whole French army.

That night the English made good cheer and at dawn the following morning they were drawn up in positions carefully selected the day before.

In his rear Edward parked all his tents, wagons, and horses, for every man that day was to fight on foot.

His army was drawn up in three Divisions. The first under command of his son, the Black Prince, was 3,800 strong, 2,000 of whom were archers. With the Prince were the Earls of Warwrik and Oxford, Sir Godfrey Harcourt, Sir John Chandos and other experienced leaders.

The second Division numbered 2,000 of which 1,200 were archers. It was echeloned to the left rear and commanded by the Earls of Arundel and Northampton, the Lords DeRoos, Willoughby and others. The reserve was posted on a hill to the rear and was 2,700 strong. It will thus be seen that the English force was but 8,500 men, while the French army, according to one account, numbered 120,000 men.

Supposing, however, we take 35,000 off that total, it would still leave the odds at 10 to 1 against the English.

Philip had lost a whole day at Abbeville waiting for the Count of Savoy who was to have joined him there with 1,000 lances. This morning, however, the 16th of August, he resolved to wait no longer, and advanced to give battle to Edward.

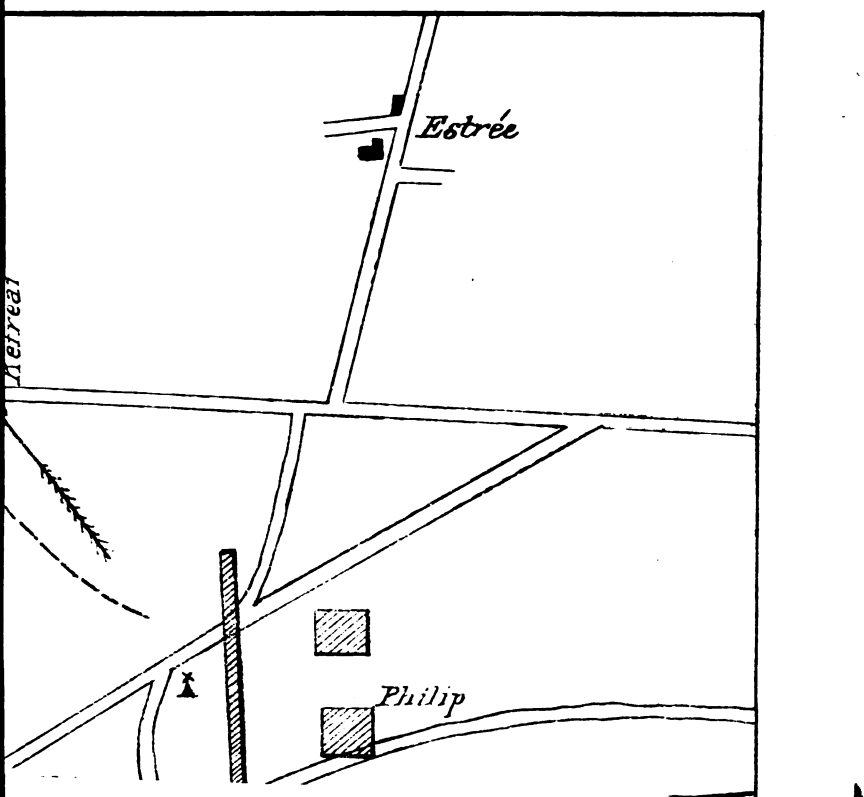
Advancing rapidly from Abbeville, he soon came in sight of the English army, and reflecting this his men were tired and his rear-guard far behind, he resolved to halt where he was and wait until the morning.

The order to halt was given, but in those days it was not so easy a matter to arrest the march of so large, and so undisciplined a force. The van-guard indeed halted but the main body pushed on followed by the rear ward driving on by sheer weight those in front. The whole enormous seething mass of horse and foot slowly advanced like a huge wave down the Vallée des Clercs to the English position. When within bow-shot of the Black Prince, they halted fast enough and the van-guard fell back on those in rear causing indescribable confusion and disorder.

Philip seeing he could not halt his force, gave the order for battle and summoned to the front his Genoese cross-bow legion. These were 15,000 strong under command of Doria and Grimaldi. The men were tired and exhausted having marched six leagues carrying their heavy cross-bows.

They, however, formed up and led the attack, supported by the Comte d'Alençon with a very large body of cavalry.

While this was going on the sky was darkened by an eclipse of the sun, the storm-clouds gathered, and amidst peals of thunder, the rain



Ten years later the Black Prince gained a splendid victory at Poitiers against the whole French army. He had with him but some 12,000 men, very few of whom were English: most of them were Gascons.

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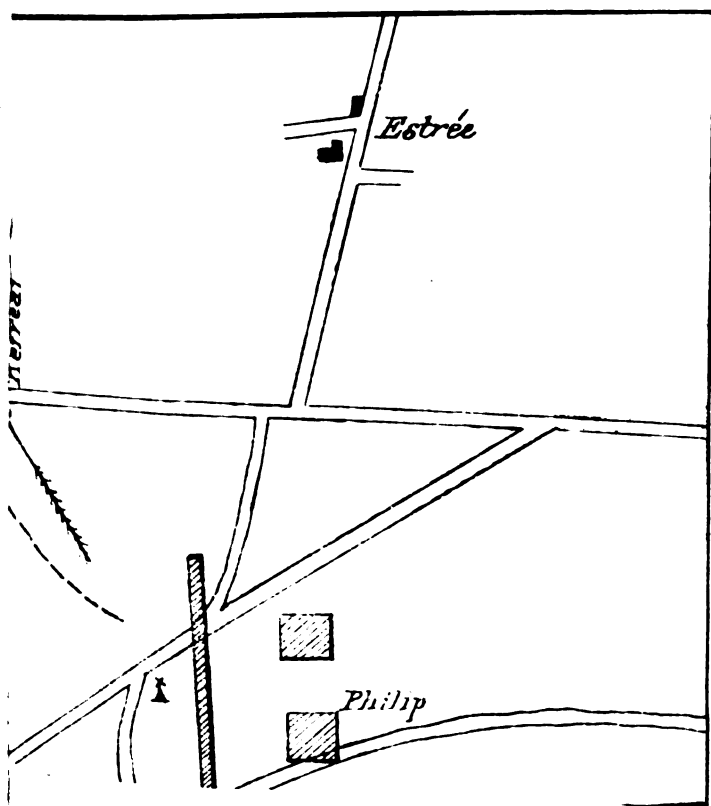
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CRÉCY
28th AUGUST 1346

REFERENCE

CRÉCY

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Ten years later the Black Prince gained a great
 victory against the whole French army. He had with him but some
 12,000 men, very few of whom were English: most of them were
 Gascons.

The following day the English raided on Crotay and several other towns where they found plentiful and much needed provisions. They also captured several ships laden with wine which was much appreciated by our troops who of late had fared very badly.

Nothing up to this had been heard of the Flemings, but Edward, encouraged by his success at Blanche Tige, now determined to make a stand at Crécy and fight the whole French army.

That night the English made good cheer and at dawn the following morning they were drawn up in positions carefully selected for the day before.

In his rear Edward parked all his tents, wagons, and baggage for every man that day was to fight on foot.

His army was drawn up in three Divisions. The first and foremost command of his son, the Black Prince, was 3,800 strong, 1,200 of whom were archers. With the Prince were the Earls of Warwick and Hereford, Sir Godfrey Harecourt, Sir John Chandos and other experienced soldiers.

The second Division numbered 2,000 of which 1,200 were archers. It was echeloned to the left rear and commanded by the Earls Arundel and Northampton, the Lords DeBoos, Willeart de Vieuxpont. The reserve was posted on a hill to the rear and was 1,700 strong. It will thus be seen that the English force was but 8,000 men, while the French army, according to one account, numbered 130,000 men.

Supposing, however, we take 35,000 of that total, it will still leave the odds at 10 to 1 against the English.

Philip had lost a whole day at Abbeville waiting for the Count of Savoy who was to have joined him there with 15,000 men. Being, however, the 16th of August, he resolved to wait no longer, and advanced to give battle to Edward.

Advancing rapidly from Abbeville, he soon came in sight of the English army, and reflecting that his men were tired and his baggage far behind, he resolved to halt where he was and wait until the morning.

The order to halt was given, but in those days it was not so easy a matter to arrest the march of so large and so untrained a force. The vanguard indeed halted but the main body pushed on followed by the rear ward driving on by sheer weight of numbers. The whole enormous swelling mass of horse and foot slowly advanced like a huge wave down the valley towards the English. When within bowshot of the Black Prince, they halted for a moment and the vanguard fell back on those in rear causing confusion and disorder.

Philip seeing he could not halt his force, gave the order to advance and continued to the front his two sons crossed a hill. The 15,000 strong vanguard of Philip's army followed. The tired and exhausted heavy marching foot began carrying their crossbows.

They, however, turned up and led the attack, supported by Count d'Almon with a very large body of cavalry.

While this was going on, the sky was darkened by an eclipse of the sun, the attack was gathered, and amidst peals of thunder, the re-

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descended in torrents, slackening the strings of the cross-bows and the English long-bows in their cases sustained no injury.

Nor was the eclipse the only omen, in that credulous age, to may the French. Flocks of croaking ravens hovered over the field if they anticipated the carnage which followed, like that "canopy fatal" at Philippi, and the hearts of the enemy failed them.

When storm and eclipse had passed, the sun shone out brightly the backs of the English, but in the faces of the Genoese who were prevented from taking aim.

Edward having formed up his men rode down the ranks encouraging them to fight bravely. He then took up his position in the wind-mill on the hill.

The Genoese made their advance with a terrible shout to strike terror to the hearts of the English. Three times they shouted and then, advancing, began to discharge their bolts.

Then the English moved indeed, but it was *one step in advance* and so deadly was the shower of arrows which followed that the Genoese fell back in confusion. Seeing this, the French king in a fury shouted "Kill we these scoundrels for they do us no good, but banish them in advance." Thereupon the French men-at-arms fell on the Genoese killing and wounding many and making the disorder in their ranks more confounded.

The English arrows did much damage to d'Alençon's cavalry, and these, getting clear to a flank fell with great fury on the Prince's wing and fought very fiercely for some time.

The second Division now moved up to the support of the Prince.

Philip tried hard to get to d'Alençon's aid but could not penetrate the hedge of English archers in his front.

At a moment when the conflict appeared doubtful, the Earl of Warwick sent to request a reinforcement from the reserve. Edward was watching the fight from the wind-mill, asked if his son were wounded. "No Sir," replied Sir Thomas Norwich, "but he is sorely beset." "Let the boy win his spurs," said the King. "He shall have none from me, for I am resolved, if it please God, that the honour of this day shall be his."

Immediately after this the Comte d'Alençon was killed, and his troops scattered.

Philip led several gallant charges but was repulsed each time with great loss. His horse was killed under him, and by the hour of evening he had about him not more than 60 men of all sorts. Then John Hainault seizing his bridle-rein turned him from the field.

Such was the famous battle of Crécy. The French loss was enormous. There fell of them 11 Princes, 80 Baronets, 1,200 Knights, about 30,000 common men.

The principal victim was the blind King John of Bohemia, whose crest and motto are still used by our Princes of Wales,

Ten years later the Black Prince gained a splendid victory at Poitiers against the whole French army. He had with him but 12,000 men, very few of whom were English: most of them Gascons.

The French were totally defeated, and their King John, and Prince Philip were taken prisoners to London.

We have not, however, time to consider this battle, but must pass on to another, one of the most remarkable that has ever been fought. Azincourt, corrupted by the English into Agincourt, where King Henry V totally defeated the Royal army of France, estimated at 100,000 men, with barely 5,500 English troops.

His army when he took the field in 1415 consisted of 24,000 infantry and 6,500 horse. He landed in the mouth of the Seine and laid siege to Harfleur.

The place surrendered in 36 days, but in the meantime a terrible epidemic broke out in the English camp and decimated the troops so that when the sick and wounded were re-embarked the King had left but 6,000 men. He scorned, however, to return to England without some honour gained, and so determined with this handful of troops to march over-land to Calais. "Our mind is made up" he said to his captains, "to endure every peril rather than that they should be able to reproach us with being afraid of them. We will go as it please God without harm or danger, but and if they disturb us on our journey, why then we must fight them and victory and glory will be ours."


The King of France with the Dauphin and a large army lay at Ronen. The Constable of France was in Picardy in front of the English with also a large force which was being recruited daily.

Henry set out on the 6th of October. He crossed Normandy safely but was harrassed by hostile bands, more numerous than his whole force, who hung on his flanks and rear cutting off stragglers and laying waste the country, so that the English suffered much from want of food as well as by the sickness they brought with them from Harfleur.

Henry hoped to be able to cross the Somme at the famous ford of Blanche Taque, but he found it fortified and was forced to waste a week working up the left bank looking for a crossing. All the bridges were destroyed and the fords strongly guarded. At last, however, they found a neglected ford between Voyennes and St. Quentin and crossed. The Constable now fell back on St. Pol in Artois. Here he was daily recruited until in a few days the whole Royal army of France was in Artois. Henry came up with him on the 24th of October when he crossed the deep and rapid Ternois. Seeing ahead of him some French columns, he formed order of battle, but the enemy retreated towards the Castle of Azincourt and the English encamped for the night near Maisoncelles.

The French were badly posted between two woods which gave them no room to deploy and heavy rain falling during the night made the ground very soft. The French horses were kept moving about all night to keep them warm, for it was very cold, and this converted the battle field into a heavy swamp.

As soon as the moon was up, Henry sent officers to survey the ground, and, so slack were the enemy, who spent the night carousing, that he was enabled to post two bodies of archers in ambush, one in the wood of Tramecourt and the other in the French rear near Caulers



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Earl of Suffolk.

The next victory against long odds which we shall review was won by Major General Arthur Wellesley in 1803 against the Mahrattas at Assaye.

Our Sepoys were first trained to English discipline and tactics in 1746.

During the Governor Generalship of Warren Hastings, 1774 to 1784 they were greatly increased in numbers and efficiency.

On more than one occasion they crossed bayonets with the French with nearly equal numbers and showed themselves equal under proper leading, to a contest with that warlike nation. What they have done, they will do again, and I believe that in future wars in this portion of our Empire, we may confidently rely on the courage and loyalty of our native troops, and expect no less from them than the devotion and fortitude they displayed in many a brilliant feat of arms in the last century, one of which we will now consider. After the destruction of Tippoo Sultan the Mahratta Confederacy made itself very formidable. One Perron, a Frenchman, was Scindhia's Commander-in-Chief, and under him the Mahratta armies were well and carefully trained. They had a very numerous and formidable cavalry.

In 1802 Scindhia expelled the Peishwa from his dominions. The Peishwa, our ally, applied to the British for help which was accorded. The Nizam joined the English, while the Raja of Berar and Holkar another Mahratta Prince nearly as formidable as himself, joined Scindhia. General Lake took the field with 10,500 men and marched on Delhi. Perron commanded an army of 17,000 disciplined and trained infantry mostly officered by French officers; he had also an immense body of irregular troops and from 15 to 20,000 cavalry and a numerous and well appointed artillery train.

Lake defeated him at Allyghur, taking that strong fortress, and Perron, on his undertaking to leave Scindhia's service and retire into private life, was permitted to reside in Chandernagore.

In the meantime Wellesley, with his cavalry alone, made a dash on Poona, doing 60 miles in 30 hours. He drove out Holkar's troops, restored the Peishwa to his throne and by this brilliant and rapid raid saved the capital from being burnt.

In August 1803 the Mahratta armies were massed on the Nizam's frontier.

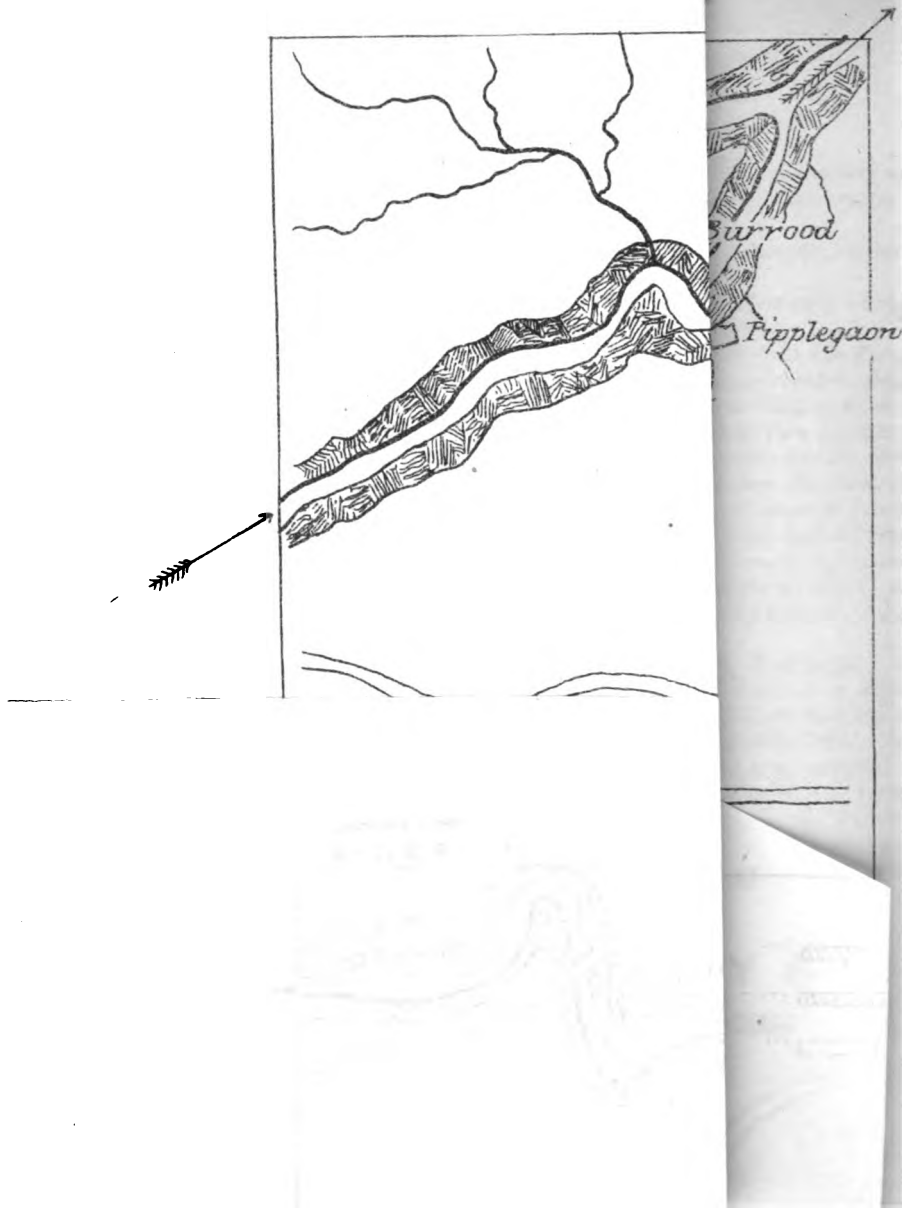
On the 8th of that month Wellesley suddenly appeared before the strong fortress of Ahmednuggur. With great boldness, before pitching a tent, he took by escalade the walled and fortified town. On the 9th he opened his trenches, and by the 12th so great a breach had been made that the fortress surrendered.

The moral effect of this victory was very great. In the middle of September Wellesley heard that Scindhia's army, being re-inforced by 16 Battalions commanded by French officers and a large train of artillery had entered the Nizam's territory and were encamped on the Kaitna river. He immediately resolved to attack them. So eager was he to prevent their escape that he detached Major Stevenson with a portion of his force to move in a parallel direction some miles to his

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left. This was a blunder as the Duke afterwards confessed. He should have kept his small army concentrated. As it happened, he was obliged to fight before Stevenson could come to his assistance. On the 23rd of September Wellesley, who was deceived by a false report that the enemy were in retreat and that their cavalry had already left the district, came up with the whole Mahratta army which he found posted on the left bank of the Kaitna.

He sent word to Stevenson, who was eight miles on his left, and advanced to reconnoitre with the 19th Light Dragoons and three regiments of native cavalry composed of Mysorees and friendly Mahrattas.

His infantry consisted of but two British regiments, the 74th and 78th, and five native regiments. He had only 14 guns. In all 4,500 effective men, while the enemy was 50,000 strong, 30,000 being Mahratta horse, and had 97 guns. But the heart of the great captain was as stout and intrepid as when, twelve years later, he—

“On that loud Sabbath shook the Spoiler down
In that world-earthquake—Waterloo.”

Retreat was only less perilous than advance. He therefore resolved to attack.

A glance at the map will show the position of Scindhia's force. Encamped on the plateau between the Juah and Kaitna rivers, which two streams, joining to the east of Assaye, form the river Poorna, a tributary of the Godavery, their right rested on Bokerdun, and their left on Assaye. The cavalry was on the right flank. Wellesley arrived in front of their right, but seeing the position from some rising ground, and believing that if he could defeat the infantry on the left, he had not much to fear from the cavalry, he marched down the right bank of the Kaitna looking for a ford.

The natives declared there was none, but Wellesley with his eagle eye, noticing the proximity on opposite banks of the villages of Pippelgaon and Burrood inferred that a ford must exist between them, nor was he mistaken.

He therefore advanced on Pippelgaon, the 19th guarding his rear and the native cavalry his right flank.

The chief officer of the Nizam, on hearing the order to advance, exclaimed “God is great!” On being asked by Wellesley after the battle what he meant, he said—“That you were mad.”

The Mahrattas now crossed over a large body of cavalry and moved down on the British rear. Leaving the native cavalry to keep them in check, Wellesley crossed the ford and formed up in three lines, the 74th on the right of the first line and the 19th Dragoons in rear on the right. This position possessed the great advantages of having the flanks protected and a narrow front, like that at Agincourt, but against this was the fact that in that confined space every shot from the enemy's guns told.

The Mahratta army was quickly and skilfully drawn up by their French officers to meet this attack. Their 97 guns opened a fearful cannonade and quickly silenced our artillery, killing all the bullocks, so that during the advance they had to be abandoned.

The crisis was as desperate as that at Agincourt. Death was the only alternative to victory. But the troops under Wellesley were as cool and resolute as those of Henry V.

Wellesley seeing that the enemy's guns must be captured or the day was lost, fired but two volleys and then advanced against them with the bayonet. The first line advanced with admirable steadiness, closing up, as great gaps were made in their ranks by shot and shell.

The officer commanding the picquets on the right, mistaking his orders, turned towards Assaye. The 74th being ordered to support the picquets, followed, and a great gap was made in our line.

Seeing this a great body of cavalry advanced against the flank of the 74th. To save them Wellesley ordered the 19th Dragoons to the front and they were thus brought too early into the fight and suffered severely.

Our infantry swept on and took the guns, and then a very fierce fight took place with the Mahratta infantry who fought bravely and well. Eventually, however, they were broken and fled, our troops following in pursuit.

Now the enemy's gunners who were shamming dead under the carriages, jumped up and turned the guns on our rear causing great loss to friend and foe alike. Wellesley, heading the 78th in person and assisted by the 7th native cavalry which had crossed the ford, again re-captured the guns. The 19th were then let loose on the flying enemy and did great damage among them, turning their flight into a wild stampede. The French officers now rallied a large portion of their army, and formed up in a new position to the rear, but on being charged by the 19th under Colonel Maxwell, they broke and fled. Maxwell himself was killed in this charge.

The victory was now complete. The enemy left 2,000 dead on the field, including Scindhia's chief Minister, and their 97 guns with a vast quantity of stores and ammunition fell into our hands.

Our loss was very heavy, 409 killed and 1,622 wounded, or half the effective force *hors-de-combat*.

Wellesley, who led the 78th in person against guns and also against the village of Assaye where very fierce fighting occurred, had two horses killed under him. A bullet passed through his epaulet. All his staff officers had their horses killed and his orderly's head was taken off by a cannon ball at his side.

Assaye was the fiercest battle ever fought in India. This was facing odds indeed, and great is the glory which history accords the victors.

The late Poet Laureate referring to this action wrote these stirring lines—

“ For this is England's greatest son,
He that gained a hundred fights,
Nor ever lost an English gun,
This is he that far away,
Against the myriads of Assaye
Clashed with his fiery few—and won.”

We must now move on six years, and review another famous battle fought by the same great commander against the French in Spain in 1809—the battle of Talavera.

I think I can hear some one say—"Where were the odds here?" Well they were in reality very great. It is true that Sir Arthur had with him the headstrong, foolish, pompous, unsoldier-like Spanish general Cuesta, who had under his command 33,000 Spaniards and 70 guns, but these were useless. Only two battalions, one cavalry regiment, and two guns ever fought at all, and Wellesley had to contend against 50,000 veteran French soldiers, who considered themselves invincible, with 80 guns, his own effective force, for as I have said the Spanish were useless, being but 16,000 English troops, 3,000 Germans and 30 guns. Moreover the English troops were mostly raw untried men, so recently drafted from the Militia, that many of them still wore their Militia uniforms. They had never seen a shot fired, and had to face Napoleon's veterans including the Royal Guards. The moral odds against us here were far greater than those of mere numbers.

The situation was generally, this—

Marshal Victor was falling back on Toledo followed by the British army moving down the valley of the Tagus.

Cuesta, the heedless and headstrong, insisted on pursuing them tho warned by Sir Arthur of the danger he exposed himself to of separating himself from him.

As it happened Joseph Buonaparte and Sebastiani were both marching to join Victor, being aware of the presence of the British at Talavera. On the morning of the 25th of July their concentration was effected and King Joseph had thus 50,000 men and 90 guns drawn up behind the Guadarama within a few miles of Cuesta's advance guard.

The Spanish main body was at St. Ollalla. Sherbrooke, whom Sir Arthur had sent across the Alberche with two divisions and all the cavalry, to keep if possible Cuesta out of mischief, was at Casalegas, and Sir Arthur himself at Talavera. Wilson with 4,000 men was at Escalona, so that while the French were marching concentrated to attack Wellesley, the Allies were in four disconnected bodies, separated one from another.

At 2 o'clock in the morning of the 26th the French crossed the Guadarama and drove the Spanish cavalry out of Torrijos, pursuing them to Alcabon where Zayas was drawn up with 4,000 infantry, 2,000 cavalry and 8 guns.

On the first sight of the French infantry, Zaya's division fled in disorder towards St. Ollalla. The disaster would have been very great had not Albuquerque boldly come up with 3,000 cavalry and held the enemy in check. As it was the Spanish lost 4,000 men that day, and had not Sherbrooke intervened between them and the French, Cuesta's rashness might easily have ended in the total dispersion of the Spanish army.

Sir Arthur, seeing a great battle was at hand, with very great difficulty persuaded Cuesta to fall back on Talavera on the morning of the 27th. He sent to recall Wilson, and leaving Mackenzie's division and a cavalry brigade at the Casa Salinas, fell back six miles into the position he had chosen for the battle. He thus arranged his line. The Spaniards at Talavera in two lines, having two redoubts and a breast-

work guarded by felled trees in front. Their cavalry was in rear of the infantry. He thought that if they ever fought it would be here, protected as they were on all sides. We shall see presently how they behaved when the fight commenced.

Behind the big redoubt was our light cavalry brigade; then came Campbell's division in two lines—Sherbrooke's division in one line, for Mackenzie who was watching the Alberch  at Salinas was to fall back in his rear. Hill's division should have closed the line by taking possession of the high hill on the left which was the key of the position, but for some unexplained reason, this was not immediately done.

The whole line was two miles long. The left rested on a ravine between the low hills and the range of mountains. The front was protected by a watercourse rising about the middle of the position, deep on the left, and a chasm in the valley. Part of the cavalry was in the plain behind the left.

Before daybreak on the 27th King Joseph put his army in motion. His cavalry led, followed by Victor, Sebastiani, the Royal Guards and the Reserve, in succession.

At 1 o'clock Victor reached the heights of Salinas whence the dust of the Allies taking up their position could be perceived.

The French disposition for attack was this. Sebastiani against the Allies right, the cavalry against their centre and Victor against their left: the Guards and Reserve to support Sebastiani.

Mackenzie neglected to send out patrols, a grave error, and at 3 o'clock he was surprised by two divisions of Victor's corps. So sudden was the attack, that Sir Arthur himself, who was in the Casa, barely escaped capture. The English brigades were separated, and, being young soldiers, they fired on one another and were driven in confusion from the forest to the plain.

In the midst of this rout and disorder, the 45th, a stubborn old regiment, and a few companies of the 60th Rifles showed an unbroken front, and, led by Sir Arthur himself, held the enemy in check, so, supported by the cavalry, all were able to retire in good order into the position. Mackenzie with one brigade fell in behind the guards; Colonel Donkin, with the other brigade, occupied the high hill on the left and so, accidentally, filled the position.

This out-post affair cost us 400 men.

Victor, as soon as his artillery was up, issued from the wood and rapidly crossed the plain, making a fine show. He took post on a hill opposite Donkin and opened a heavy cannonade.

Simultaneously the 4th corps and reserve advanced against the Allies' right. Their light cavalry under Colonel Milhaud, cantered up to the barricade and commenced a pistol skirmish with the Spanish.

These brave troops of Cuesta's fired one general volley in the air, and then, as if deprived of reason, 10,000 infantry and all their artillery broke and fled in the wildest disorder. The artillery took their horses, the infantry threw away their arms.

O'Donaghue, an Irishman, their Adjutant General, was foremost in the flight, and even Cuesta himself went off slowly.

Sir Arthur now moved up some squadrons of his light cavalry on the French flank and the Spaniards who remained, seeing they were quite safe from attack began to use their muskets with effect, so the French were repulsed with some loss.

Most of the run-away fled to Oropesa, saying the Allies were in full retreat and the French in hot pursuit.

Thus the right rear became the scene of indescribable disorder, and it cannot be concealed that some English officers disgraced their uniform on this occasion.

When Cuesta recovered himself, he sent his cavalry to head the runaways and drive them back. Thus during the night some 4,000 infantry and a portion of the artillery were brought back but the Spanish army next morning was 6,000 short of strength and the big redoubt in the centre was silent for want of guns.

The hill on the English left was the key of the position. Victor, seeing it weakly held, and deeming the confusion on the Allies' right a good opportunity, without informing the King, now determined to attack the hill. He directed Ruffin's division against it, supported by Villatte, while Lapissé was to engage the German Legion, but not seriously.

The assault was quick and vigorous. Donkin repulsed his assailants in front but others got round his left and gained the summit of the hill. It was after sun-down when the attack was delivered, and now it was nearly dark! Wellesley now sent General Hill to the relief of Donkin, and in the darkness, finding himself under fire from the top of the hill, he imagined it was some mistake and rode up with his brigade-major Fordyce. In a moment he found himself surrounded by the French. Fordyce was killed, Hill's horse was wounded and a grenadier seized his bridle; he however put spurs to his horse, and, breaking away, gained the bottom of the hill where he found the 29th. Placing himself at the head of this regiment, he now returned and led so fierce a charge that the French could not stand before it.

Having thus happily recovered the summit, Hill now brought up the 48th and a battalion of stragglers from Sir John Moore's force. These with Donkin's brigade now held the hill. They were just in time, for the two remaining regiments of Ruffin's division which had been entangled in the ravine now came up, and Lapissé opened fire on the German Legion. A fierce fight now ensued but eventually the French were repulsed with a loss of 1,000 men. Our own loss was 800. This ended the fight of the 27th. At mid-night, the cowardly Spaniards at Talavera, hearing some horses moving, opened a tremendous fire of infantry and artillery at nothing at all which lasted 20 minutes, and during the remainder of the night they kept it up at intervals, killing and wounding many men and officers in the English camp.

At day-break on the 28th Ruffin again assaulted the hill with his whole division supported by Villatte. This assault was preceded by a terrible artillery fire which swept away our ranks by whole sections. For 40 minutes a tremendous conflict ensued. Hill was wounded, and his men fell fast, but yet they stood their ground, and the French fell back under cover of their artillery, having lost 1,500 men.

Sir Arthur now strengthened his left, bringing up Bassecour's Spanish division and Albuquerque's cavalry.

The French up to this had gained nothing. Joseph now held a council of war in which Jourdan advised him to retreat behind the Alberché and await Soult's arrival on the British rear. Just then a despatch was received from Soult saying he could not be in Plasencia before the 5th of August.

Joseph therefore determined to give battle. His general attack commenced at 1-30. Just then some hundreds of English soldiers who were employed in carrying the wounded to the rear, came up in a body, and were taken by the French (as their accounts of the battle will show) for Wilson's division whose strength they had greatly exaggerated.

Nevertheless they opened fire with their 80 pieces of artillery. The 4th Corps fell on Campbell's division with great fury, but, assisted by Mackenzie and two Spanish battalions, he repulsed them and took 10 guns. The French then gathered for fresh attack, but our fire was very hot and a Spanish cavalry regiment charged them in flank, which secured the victory on our right.

Meanwhile Villatte advanced against the British left and Ruffin attempted to get round our left flank.

Sir Arthur now ordered Anson's cavalry brigade to charge the heads of these columns. Anson had with him the 1st German Hussars and the 23rd Light Dragoons. They made a gallant charge, but were met half-way by a hollow cleft or ravine which threw them into great confusion. The Germans pulled up on the brink: the English went down bravely tho' many horses fell, and scrambling out the other side by twos and threes, in this broken order, they charged a brigade of French cavalry in rear.

The Polish Lancers now came up and the 23rd had to retire with a loss of half their number. The moral effect of this charge was so great that it virtually paralysed the French action on their right.

While this was going on, the French had broken our centre. Here Lapissé's division with a numerous artillery had made great gaps in our line, but had been several times repulsed, when the Guards rashly pursued too far and were hemmed in by the enemy and at the same time the German Legion began to waver. Now it was that the gallant 48th, led by Colonel Donellan, came to the rescue. Advancing down the slope in a beautiful line, as if on parade, they fell on the flank of the French columns. The Guards and Germans rallied, the Light Cavalry Brigade came trotting up, our artillery played on the French masses, and the battle was restored.

This was the crisis of the fight.

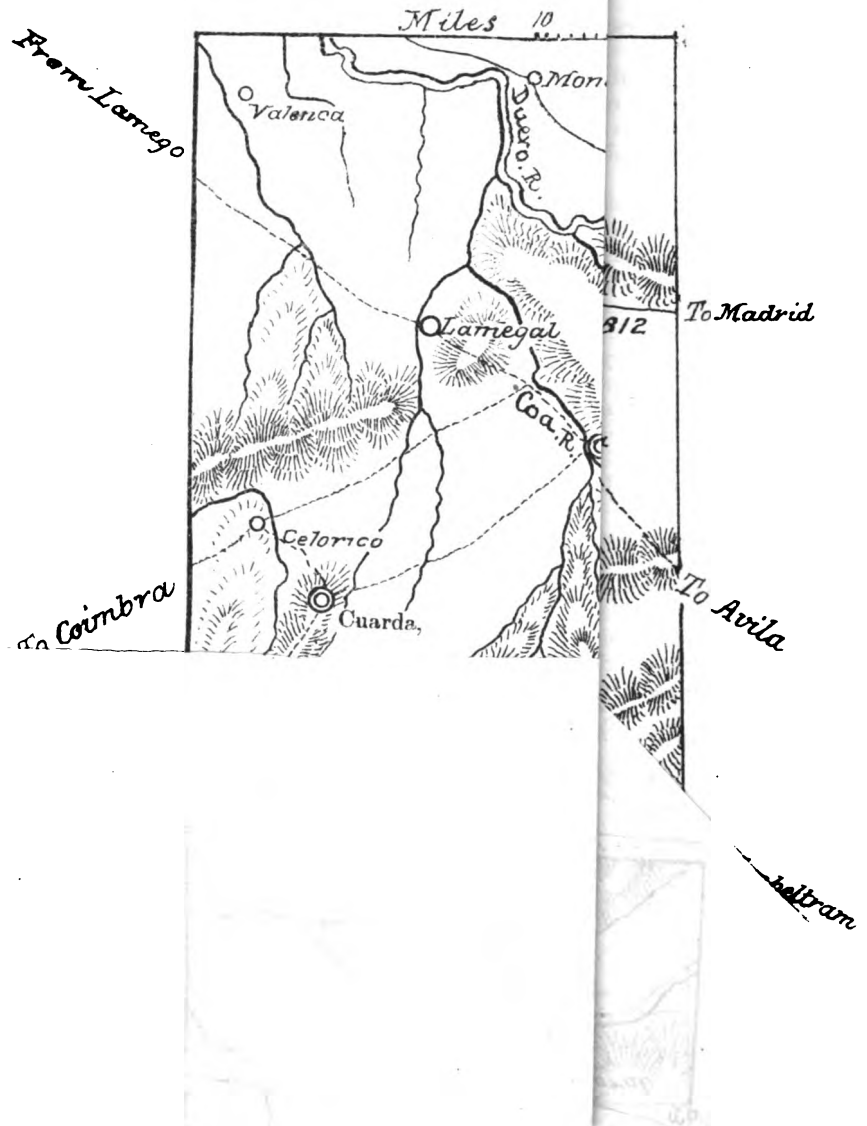
Lapissé was mortally wounded, and every where the French gave way.

The British, now reduced to 13,000 and weak from hunger, could not pursue. About 6 o'clock the fighting ceased, each army holding the position of the morning.

The total British loss was 6,200. The French lost 7,390 and 17 guns. The Spaniards *said* they lost 1,200 but this is very doubtful.

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nglish.

The British line was now contracted and brought under the edge
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The British, now reduced to 13,000 and weak from hunger, could not pursue. About 6 o'clock the fighting ceased, each army holding the position of the morning.

The total British loss was 6,200. The French lost 7,390 and guns. The Spaniards said they lost 1,200 but this is very doubtful.

The following morning the French retreated beyond the Alberché, and Crauford came up with Light Division and took up the outposts. He was at Plasencia two days before, having just marched 20 miles, when he heard from the Spanish stragglers the wildest stories of the defeat of the Allies and the death of Wellesley. Crauford, nothing daunted, boldly hastened on and covered 62 miles in 26 hours at the hottest time of the year, leaving but 17 stragglers behind, a feat not unworthy of record.

The last instance of a brave struggle against Odds, which I shall relate, is generally known as the Combat of the Coa, and was fought by General Crauford on the 24th of July 1810, just a year after Talavera.

The odds here were 24,000 French infantry, 5,000 cavalry and 30 guns, against 4,000 British infantry, including some Portuguese Caçadores, 1,100 cavalry and 6 guns.

The French were investing Ciudad Rodrigo. Lord Wellesley was not strong enough to render the town any assistance. Massena made every endeavour to draw him on to fight, but Wellington, a far greater general, bided his time. Crauford with a weak division beyond the Coa, had for three months maintained his ground within two hours march of 60,000 French, appropriating the resources of the plain entirely to himself. On the 11th of July Ciudad Rodrigo surrendered, and Crauford fore-seeing a general advance of the French, fell back towards Almeida, and asked for a reinforcement of two battalions. Wellington replied that he would willingly give him two divisions if he could hold his own, but as that was impossible, he very strictly ordered him not to fight beyond the Coa. This however did not at all suit the fiery temper of Crauford. He thirsted for honour and distinction and deliberately disobeyed Wellington's orders.

On the 21st the enemy advanced. Crauford blew up Fort Conception and fell back as if to cross the Coa. Nothing however was further from his intention.

On the evening of the 23rd he drew up his division as shown on the map, his right on some broken ground, his left on an unfinished tower protected by the guns of Almeida. His cavalry was on the plain in front. A mile in his rear, at the bottom of a deep chasm, was the bridge over the Coa.

This was a bad and very faulty disposition, as any military man will see at a glance. A retreat must, of necessity have eventuated, and a better General than Crauford would have provided for it. Brave, however, to a fault, all his thought was fighting, and as we shall see, a right gallant fight it was.

The night was very wet and the troops were drenched with rain. At daybreak they were under arms. A thick mist hung over Almeida. Some pistol shots were heard in front. Then came the order for the cavalry and guns to advance. Now the mist cleared, and 24,000 French infantry, 5,000 cavalry and 30 guns were seen bearing down on the English.

The British line was now contracted and brought under the edge of the ravine.

Brigade Major Kowan posted two more companies of the ~~same~~ regiment on the hill to the left. They were joined by some men of the 95th. These two posts now flanked the road, so as to allow of the right wing crossing the bridge. Part of the 52nd, however, were still a long way off.

Now the French gathering in great force, made a rush and drove back the post on the right hill.

The crisis was imminent, but the gallant McLeod was equal to the occasion. Immediately turning his horse, he called on his men to follow him, and waving his cap rode with a shout straight at the French. The suddenness of the thing and the animated action of the man had the desired effect. A mob of soldiers rushed after him cheering and charging as if a whole army were behind them.

The French, astonished at this fierce attack, stopped short, and before they could recover themselves, the 52nd had passed the bridge. McLeod followed at a run and gained the other side without loss. It was a fine exploit.

As the infantry crossed the bridge they drew up in loose order on the hill. The artillery came into action on the summit. The cavalry occupied all the roads to the right to watch the ford and observe the bridge of Castello Bon six or seven miles higher up, for it was to be feared that while Ney was attacking in front, Junot with the 8th Corps, might cross there and get between the light division and Wellington.

The river was now rising fast, and further retreat was impossible until night fall. Soon the French crowded on the opposite bank and their artillery and infantry opened a hot fire which was vigorously replied to by the English.

Now a dragoon was seen trying the depth of the stream above the bridge. Two shots from the 52nd killed man and horse, and their bodies floated down between the hostile lines, showing the river to be unfordable.

Now the roll of French drums was heard and the head of a noble column darkened the long narrow bridge.

A drummer and an officer in splendid uniform dashed to the front and with loud shouts the whole rushed forward.

At first the depth of the ravine deceived the English aim and two-thirds of the passage was won before a single Frenchman fell. They quickly corrected their mistake, and, a few steps more, and their whole leading section goes down as one man. The column behind presses forward but cannot pass that terrible barrier. Thick and fast they fall before the British fire and the heap of dead rises as high as the parapet. Soon the whole column has melted away.

Then loudly rose the British cheer, but it is as loudly re-echoed from the further bank and soon another column more numerous than the first, again attempt the bridge.

This time, however, our troops knew the range and before half the passage was won, the whole French mass was torn, shattered, dispersed or slain.

Some 10 or 12 men got over and behind some rocks on the river bank. A brave French surgeon now came down to the bridge, and, waving his handkerchief, commenced dressing the wounded under the hottest fire. Immediately every English musket was turned away from him. The brave respect the brave.

The French made one more attempt to cross the bridge but failed, and the fight was needlessly continued, many falling on both sides until at 4 o'clock heavy rain falling put an end to the battle.

Marshal Ney at once saw Crauford's faulty disposition of his troops, and swooped down on him like an eagle.

Four thousand cavalry supported by a numerous artillery swept the plain driving our cavalry before them. The Infantry darted at charging pace against the British left and centre.

Now Crauford made some worse mistakes. He withdrew some of his troops and advanced others without reason, and worst of all, he placed the 43rd in a walled enclosure 10 feet high with only one outlet, a few hundred yards down the ravine.

Now the firing became very heavy. Our cavalry and artillery followed by the Portuguese in full retreat swept past the enclosure. In a few moments the 43rd must be captured without hope of escape. But here, as in every other part of the field, the quickness and smartness of the battalion commanders remedied the faults of the General. Some large stones were loosened, then by a simultaneous effort of the whole regiment the wall fell, and in a moment the 43rd were up in the fighting line.

There was no time for order or formation: each officer led the group of skirmishers nearest him straight at the foe, and the fight was kept up with surprising vigour. Nothing, however, could avail against the numbers and vehemence of the French veterans. They poured over the edge of the ravine. Their guns, ranged on the summit, poured down a hail of grape shot on our retreating line.

Their Hussars sweeping along the *glacis* of Almeida, came tearing down the road sabring every thing in their way. The guns of the fortress dared not open, as friend and foe were mixed in a hand-to-hand *melée*.

Ney now sent five officers in succession to order Montbrun to follow the Hussars with the whole of his cavalry. Had he done so, there is little doubt the British would have been utterly defeated. Montbrun, however, disliked Ney, and said he would take no orders except from Massena himself, so would not stir.

Now our battalion commanders, with admirable skill, extricated themselves from their perilous situation. The British regiments, with splendid discipline fell slowly back, stopping to fight where opportunity offered. Down the ravine they came, over rocks and through tangled vineyards, hotly pursued by the French. As the retreating troops neared the river, the ground became more open. The left wing, hardest pressed, reached the bridge when it was crowded by the cavalry and artillery.

Major McLeod of the 43rd, seeing the danger, rallied four companies of his regiment on the hill to the right of the road.

Brigade Major Rowan posted two more companies of the same regiment on the hill to the left. They were joined by some men of the 95th. These two posts now flanked the road, so as to allow of the right wing crossing the bridge. Part of the 52nd, however, were still a long way off.

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Such was the combat of the Coa, where the British more than held their own against great odds, and in which the skill and coolness of the battalion commanders remedied the grave tactical errors of the gallant Crauford.

Lieutenant Dawson with half a company of the 52nd was left behind in the tower. He was thought to be captured, but with great intelligence, he evaded the enemy's out-posts at night, crossed by a distant ford, and rejoined his regiment.

We lost in this engagement 28 officers and 250 men. The Portuguese who made a prudent retreat very early in the day, as they usually did, lost about 50 men. Ney lost 1,000 men and the slaughter at the bridge was very great.

That night Crauford retired safely behind the Pinhel.

We have now terminated the brief review of the battles I have had time to notice in which, though outnumbered, our troops were victorious.

These backward views of military history are useful to us to-day in so far as they supply as with suggestions for the present and the future.

Since the Crimea, the standing armies of Europe have been enormously increased and now there are millions when there were but tens of thousands. Our army, however, is little, if anything more numerous than it was then. I omit the Volunteer force, which might be useful in case of invasion.

We must therefore look well to it, if we would continue to hold our own against any of the great Powers.

Let us not be dismayed, as I said at the beginning of this lecture, but let us rather calmly consider in what direction our strength lies and how we may increase it; for numbers, as we have seen, do not always give victory.

The first great point in my opinion to which we should pay attention is discipline.

What was it enabled our small force at the Coa to retire in such admirable order before six times their number? Discipline. What steeled the breasts of those fine soldiers who marched shoulder to shoulder against the guns at Assaye? Discipline.

The latter half of the present century has been remarkable for a wave of revolutionary democracy which seems to be passing over the whole civilized world. Everywhere we hear a cry against Kings and Princes, against rank and authority. In many places we see the mob with arms in their hands opposed to the civil power, and 'Anarchy' has become a household word in our mouths.

Is it possible that our army can entirely escape the taint of this wide-spread epidemic? Have we not seen signs of a relaxation in that splendid discipline which has done so much towards building up the British Empire to its present colossal proportions, and more over, have we not seen a tendency in the highest quarters to condone such offences?

Let us look well to this, for without the strictest discipline, a small force cannot expect success in facing odds, be their personal courage what it may.

As regards the three arms of our service. Foreign nations have greatly increased their artillery, and some of their guns are said to be as good as, or even better than ours.

Well naturally, the best thing for us to do would be to increase our artillery too, but if this is not to be hoped for, we should pay even greater attention than ever to good and accurate shooting, and quick and accurate range finding. If the enemy brings against us two batteries to our one, well, we must destroy those batteries. You may say this is impossible. Well, I will give you an instance of which I was an eye witness.

At the battle of Charasia on the 6th of October 1879, on the right of the English position Major Parry commanded a battery of 16 prs., supported by 3 squadrons.

The Cabulees brought out of the Sung-i-Nowishta Pass a battery of Armstrong guns and opened fire on us. Their range was accurate but as they were firing blind shells they did us no damage. At first Parry paid no heed to them being occupied in watching the hills to his right, one of which had just been carried by Major—now General Sir George White.

Presently, however, as their aim improved, he gave orders for two rounds of common shell from the right.

The enemy's guns were well placed behind the slope of a rolling mound in the mouth of the Pass where they were quite invisible except for the smoke. Well at the end of those 12 rounds, and I am not at all sure it was not before—the battery was silenced. The cavalry then pushed forward and we found 4 out of the 6 guns and 2 powder wagons smashed to pieces—bits of wheels and men and horses lying about in horrible confusion, and so damaged were the remaining two guns that they abandoned them on the road a little in rear. This is a good instance of a battery destroyed in a few minutes by good shooting. The range was some thing over 1,900 yards.

For our Infantry good shooting is of course great the *grert desideratum*. It was by good shooting that the Archers of Edward III won the passage of the Somme at Blanche Taque—it was by good shooting that the Boers beat us in South Africa, and it is by good shooting that we must win in future wars. Baron Marbot, in his interesting Memoirs, declares that the English beat the French in the Peninsula mainly owing to their splendid shooting, which he says was the best in Europe.

Shooting has made great strides since then, and we should now aim at perfection in this most important branch of military education.

While on this subject, I have a word to say about our present system of musketry training.

Individual shooting is given a secondary place, and the figure of merit which is what every regiment wishes to shine in, is made to depend on collective shooting.

Well, I have nothing to say against collective shooting, except to mention *en passant* that the Boers were individual marksmen and we volleyists and the result is historical. But what I do want to say is that it seems to me that we are not going the best way to work to improve our volley firing.

To *practise* volley shooting is not the way to *improve* volley shooting. This sounds paradoxical, but a little consideration will show what I mean.

A section of 20 men fires a volley. Every rifle explodes simultaneously. "A splendid volley" we say at the firing point.

When the result is signalled we find that only 10 of the 20 bullets have struck the target. Where have the missing 10 gone to? Who have scored and who missed of the 20?

Nobody knows, and naturally it eventually happens that nobody cares, and that the men come to look on it all as a piece of luck.

In no practice can we hope for improvement unless we are made aware of our faults and are thus enabled to correct them. It seems to me that collective firing should be practised with blank cartridge. This will improve men in rapid loading—precision of fire, and control of fire. For the range part of it, I would divide the practice into two parts. The first should consist of individual firing by word of command, with each shot signalled. The second part should consist of squads of 6 or 8 men firing volleys, each at his own target. It would then be seen who were proficient and who required more practice in part I. Finally, at the end of the course, I would have volley firing under service conditions for prizes. The result of the latter practice would show the actual fire value of the troops engaged in the contest.

Besides good shooting however, we should, I think, not lose sight of the tactics of our greatest of generals—the Duke of Wellington.

In the Peninsula he was constantly employed in facing odds and he adopted the best possible system—a defensive—offensive *rôle*.

This consisted in choosing before hand the strongest possible position and arranging his troops thereon to the best advantage.

He then allowed the enemy to break their heads against this position, remaining strictly on the defensive, until they seemed tired and disheartened. He then suddenly assumed the offensive, and by a vigorous counter attack, drove them far from his front, taking good care however not to abandon his original position by pursuing too far.

We have seen the mistake made by the Guards at Talavera.

Well, it seems to me that these tactics have been lost sight of. We hear to-day of nothing but systems of attack—attack formations and the like. In our Camps of Instruction we practise attacks but how seldom do we see a defence practised?

We may be—and before long—called upon to meet in the field a civilized army greatly our superior in numbers, and in this country where our army is composed of Europeans and Natives, anything like a defeat, or even a serious check, is by all means to be avoided, as if the Natives once lose their confidence in us they will have lost all confidence in themselves. We should therefore, I am persuaded, resume Wellington's tactics and practice defence, which will not only accustom our soldiers to the *rôle* they may be forced by circumstances to assume, but will also accustom our generals to cultivate that military "eye for country" which is so important in selecting a defensive position.

As regards our cavalry, I think we should be wise if we freed ourselves completely from the trammels of foreign systems.

If the odds are against us, no extension of our front line will prevent us from being out-flanked. On the other hand, no system of echelons, however well calculated, will give us victory when opposed to an enemy who also fights in echelons and who is our superior in strength.

What must we do then with our cavalry? We should I think cultivate a system of rapid manœuvre, and not fear to manœuvre, feint, and even retire, when in close proximity with the enemy.

Our tactics must resemble those of a light-weight opposed to a heavy-weight boxer. He does not stand in front to receive the slogging blows of his adversary, but, avoiding them, he relies on his superior agility, and springing to the right, to the left, to the rear, he delivers his own blows in the most unexpected places. These should be our tactics.

Avoiding a crushing front attack, we should approach it as closely as possible so as to prevent the enemy from foreseeing our object, then by a rapid spring, gain his flank and attack by successive echelons, and we should not hesitate to engage by single squadrons if time does not permit of our forming larger bodies, for surprise will be a great factor in our favour.

Our aim should be to defeat and put to flight each successive unit of the enemy's force, pursuing with small units to prevent them from rallying, and rapidly rally our victorious squadrons for the prompt support of the nearest body engaged. In this way we shall be continually bringing up fresh bodies of troops into the fight.

Such manœuvres will of course require careful and skilful training in time of peace.

We *must* do something to compensate for our weakness in cavalry, and it seems to me that in the direction of rapid manœuvre there lie great potentialities of success.

Finally, a word about our officers. We have to-day in our army as gallant and devoted gentlemen as those who fought at Crécy and the other glorious battles we have reviewed. But personal courage in these days is not sufficient to ensure victory. We want knowledge, skill in handling troops, an eye for country, quick to seize on points of vantage, and most of all perhaps, we require an intimate acquaintance with the military history of the past in order that we may profit to-day by the lessons it contains. All this is not to be achieved without study, and in conclusion I would most earnestly impress on my brother officers the necessity for devoting a certain portion of their time to the study of their most noble profession, the rewards of which are Honor and Glory; Fame, and Advancement; the approval of a Gracious Sovereign, and the blessings of a grateful people.

COLONEL IAN HAMILTON :—Your Excellency, General Brackenbury, Ladies and Gentlemen. It may serve to clear the way for a discussion of wider issues, if I venture a few words in friendly criticism of one of the principal deductions drawn by Colonel Neville from his study of our military history.

I refer to the lecturer's remarks on our present system of musketry training, regarding which he states, "individual shooting is given quite a secondary place, and the figure of merit which is what every regiment wishes to shine in, is made to depend on collective shooting."

The allusion is evidently to the native army course, for, in the British army, individual shooting does still count in the figure of merit. Although, however, it is perfectly true that the individual musketry training of the native army is now mainly a regimental business, the results of which no longer appear in the figure of merit, I think it hardly follows that the individual shooting has become a secondary consideration. It is, I think, indisputable that no group can be expected to fire accurate volleys unless the men composing that group have each of them been trained to shoot well in their individual capacity. And I maintain therefore that the commanding officer who wishes his regiment to excel in collective practices must nevertheless continue to give his first, and not his second, consideration to the training and shooting of the individual sepooy.

In the following sentence Colonel Neville observes, "The Boers were individual marksmen and we volleyists, and the result is historical." Now certainly this is no occasion for discussing the vexed question of the relative values of collective and individual firing, but at the same time it is right, I think, to point out that the premises here given can lead to no fair inference. For, in 1881, the British army were certainly not volleyists in the present sense of the word, and it was only very occasionally that collective fire was employed by them in action. At Majuba there were perhaps half-a-dozen volleys fired early in the day, at a range of 1100 yards, by a single section. It was reported afterwards that several horses had been killed and that a man had been wounded by these volleys, but, however this may be all the rest of the firing on that day was individual, both as regards the firing of our side and of the Boers. At Laings Nek and at the Ingogo the firing was entirely individual on both sides.

In his next paragraph the lecturer has advanced a view that volley firing constitutes an exception to a pretty general rule and that practice, in this particular connection, does not make perfect. "To practice volley shooting," he says, "is not the way to improve volley shooting." He then gives some very ingenious reasons to prove why this must be the case, but I cannot help thinking that the following figures may lead to a more reliable conclusion. At the time of the Afghan war, 1879-1880, our native infantry used to expend only five rounds in volleys, all the rest of their ammunition being reserved for individual practices. These five rounds were fired with the Snider rifle, but at much easier distances, targets and general conditions than those at present obtaining, and the percentage of hits made was 28·94. In 1889-1890, or ten years later, this percentage had risen to 42·72 although rapid volleys were by that time included in the course.

In 1892-1893 the course had been made still more difficult, including volleys at a moving object, as well as rapid volleys, and yet the percentage rose to 50·12. Finally, in 1893-1894 the record was again

broken and the volley firing percentage of hits to rounds fired attained the really admirable figure of 51·80.

In other words, as we have pegged away at collective firing and taken an ever increasing proportion of rounds from individual practices and devoted them to volleys, so have the percentages obtained in these volleys risen in more than corresponding ratio.

It may be urged that these are merely target results which do not prove that our fire would be really more effective in war. In 1891, however, an excellent opportunity offered itself of getting hold of some actual service statistics. I will not go into the story of how they were obtained which is recorded in the Annual Musketry Report for 1891-1892. The facts brought out were as follows :—

In the Samana expedition the total percentage of casualties on the enemy's side to rounds fired by us was 3·55.—Whereas, at Charasia, in 1880, under similar but on the whole more favorable conditions, the percentage realised was only ·71.

According then to war tests as well as target results our efficiency seems to have about doubled since we have taken so sedulously to the practice of our volleys. So far I have dealt to the best of my ability with what may be called the destructive portion of Colonel Neville's criticism. But I have also a very few words to say with regard to the alternative system of musketry training proposed for our adoption.

The first period of this course would consist of individual firing by word of command.

The second period of volleys by sections, each man having his own target to fire at. (An excellent idea I may remark but expensive and troublesome from the regimental point of view). The third period of volley firing under service conditions.

Now I cannot reconcile this proposed course with the previous remarks of the lecturer regarding our neglect of individual firing which he backed by an example from the Boer war of 1881. For the fault I would venture to find with the conditions laid down is that under their operation individualism will be suppressed entirely.

Under the system proposed the soldier would never once be allowed to discharge his rifle at his own discretion, and I fear the result would be that in wood fighting or on outposts he would be much less ready and efficient than a sepoy trained under the existing conditions of the native army course.

Your Excellency, General Brackenbury, I am ashamed to have taken up so much valuable time on what is more or less technical and a side issue.

I have nothing more to add unless it be a demur to the theory, expressed at the beginning of the lecture, that the veriest coward who can hold a rifle straight will be more than a match for a Rowland or an Oliver. Modern inventions may to a certain extent equalise physical strength and weakness, but it still requires a man, and a brave, cool man, to hold a rifle straight in action. The more cowardly the individual the more crookedly he will hold his rifle as soon as ever the bullets begin to fly about. The calls made upon courage by modern warfare

will, I venture to think, be just as severe in the future as they have been in the past, and surely this thought should afford some ground for reasonable hope and confidence to a nation possessing the records set forth in the lecture just delivered.

GENERAL SIR H. BRACKENBURY :—For five years of my life I held the Professorship of Military History at Woolwich, and during those years I studied elaborately and minutely scores of campaigns and hundreds of battles, travelling over a great part of Europe and examining on the spot those local conditions which had affected battles, that had influenced the fate of nations. In the twenty years that have since passed I have so forgotten all those details with which I was once familiar that, were I now called upon to undergo an examination without previous preparation, I should probably be beaten by any average Sandhurst cadet. Without doubt those to whom I lectured have equally forgotten these details, and yet that close study of mine has not been, I trust, without value, both to myself and to those who were once my pupils. Few things have given me greater pleasure than the letters which now I sometimes receive from old pupils who have become distinguished soldiers, and who recall themselves to my recollection, telling me that my lectures first led them to think seriously about their profession. I have said this because I want to impress upon you that the way to study or to teach military history is not to endeavour to load the mind with details, but to draw from those details principles and deductions, and that if those principles and deductions are remembered, the details on which they were founded may be forgotten. And so those amongst the audience to-day, who may feel it is hopeless to endeavour to remember all that they have heard about the battles which Colonel Neville has so graphically described, may take comfort and know that their time has been well spent if they can remember the few and simple principles which he has deduced from these studies in tactics.

The great principle which I think Colonel Neville has established is that for our troops to be able to face odds, as they so often have to do, they must have, first, perfect armament; secondly, perfect training of men and of officers; thirdly, perfect discipline; and I will endeavour to put these same principles to you in a different way. In his history of the French Revolution Carlyle gives a brilliant description of one man facing odds. He tells us of Bonillé standing alone on the steps at Metz and keeping back a whole mutinous regiment. Every now and then a musket is levelled at him which he looks on as a bronze general would, and which is always struck up by some corporal or other. It is the effect of discipline still telling upon the men. For two hours he stands thus keeping that regiment at bay. And it is in connection with this episode that Carlyle uses that wonderful expression "Discipline is a kind of miracle; it marks by faith."

Now in order that the soldier may face great odds calmly and with confidence, that faith must, I think, be three-fold. He must have faith in his weapon, he must have faith in his own skill to use that

weapon, and he must have faith in the officer who leads him. As regards the weapons of the British soldier in India they are the best that the mechanical science of England can supply. As regards the skill to use that weapon, his training has for many years past been under the general superintendence of Commanders-in-Chief who have been selected as being the ablest and most distinguished soldiers in the Empire, and under the direct supervision of specially selected officers, each of whom is skilled and able, and enthusiastic about his special subject, and not one of whom is, I am sure, unwilling to consider any suggestion for improvement that is made; while I know from returns recently prepared at my request in the Intelligence Department at home, that the Government of India is more liberal in the supply of ammunition for such training than any other Government in the world. Thus then the soldier may well possess faith both in his weapon and in his training to use it.

And now as regards faith in his officers. It is even now too often said by those who dislike study, "All these examinations and this training are useless. We all know that when real fighting comes the one thing that is wanted is pluck; if you have that the men will follow you anywhere." There never was a greater mistake. Skill without courage is of no avail but courage without skill may lead to disaster. Let me give you a single example from one of those battles of which Colonel Neville has spoken. There is a letter from Sir Arthur Wellesley to Sir Thomas Munro, written a few weeks after the battle of Assaye, in which he says; "Our losses would not have exceeded half of what they were had it not been for a mistake of the officer commanding the picquets. When I saw that the enemy had occupied Assaye in force I ordered him to keep out of shot from that village. Instead of that he led directly upon it. The 74th, who were on the right of the first line followed the picquets and the great loss we sustained was in those two bodies. Nor was this all. The cavalry which I had intended to keep fresh and unbroken for the pursuit had to be engaged to save the 74th, and they became so disorganised that they were unable to pursue after the battle. Moreover our last reserves had to be brought into action, we had no reserves left, and a party of straggling horse cut up our wounded." Wellesley with a generosity which he did not always display, as those of you who have read Mercer's book on Waterloo will remember, said, "I do not wish to blame this officer for it was not possible for a man to lead troops into a hotter fire than he did." But we who do not even know this officer's name, and who may regard him merely as a figure in history, may I think remember that with all his courage it was to his want of skill that the deaths of more than half the men killed in that battle, and of those wounded who were cut up, is due.

There are some words by Napier, the conqueror and regenerator of Sind, to which this example lends singular force. "An ignorant officer," he says,— "is a murderer." "All brave men confide in the knowledge that he pretends to possess, and when the death trial comes, their generous blood flows in vain. Merciful God! How can an ignorant man charge

D.

himself with so much bloodshed!" And then he says, he, the trained soldier, he, the great General, "I have studied war long, earnestly and deeply, and yet I tremble at my own deficiencies." To such words from such a man it would be waste of time for me to attempt to add.

One word more, and I have done. "Omelettes cannot be made without breaking eggs."—Battles cannot be won without losing men. Some of us present have seen, in these fights against odds, our comrades and our friends fall by our side. Others have had to weep at home over loved ones killed. To such I can only say that every true soldier envies such a death—death with no lingering pains, no backward looks of longing and regret, but death swift and sudden in the full flush and vigour of manhood. The thought of every true soldier is summed up in the two well known lines of Macanlay

"How can man die better
Than in facing fearful odds?"

And now I would ask you to join me in two votes of hearty thanks the first to the Commander-in-Chief and Lady White for their kindness in lending us this room; the second to Colonel Neville for the brilliant lecture that he has delivered, a lecture that was throughout clear and bright, perfect both in matter and in manner, a lecture that must have cost him much study and much thought, and which has I am sure to you, as to me, been of the greatest interest, and given food for deep reflection.

The following are a few remarks which had the lecture been able to be circulated before it was delivered Colonel G. Young would have liked to have put forward in the discussion.

Colonel Neville has justly referred to the importance of discipline as one of the main lessons to be drawn, but only in general terms; I should like to bring that importance a little closer home.

For I should be inclined to say, first, that the power of a small force to face odds lies in this one item of discipline, *and in this alone*, and that this importance of discipline is not merely one of the main lessons to be drawn, but *the* lesson, both from every one of the instances given in the lecture and from every other occasion where a small force has defeated a large one. And, secondly, I would remark that this multiplication of power (for it is nothing less) which is given by discipline is only obtained, like all other things worth having, by (a) much thought and (b) constant practice, and I do not think that at present it gets either the one or the other, at all events in the way necessary.

The power of discipline does not merely mean a power to keep men from running away when they would otherwise do so; it means *much* more than this, viz., a power to keep men from *advancing* when and where they are inclined, or from *firing* when and where they are inclined, and so on, which all requires a much higher power over them than one which merely keeps them from running away. It is, in fact the power, when their whole natural inclination impels them to do a

certain thing or go in a certain direction, to cause them to do just the reverse; to halt or turn aside when they are wild to rush onwards, or to remain silent under a withering fire without firing a shot in reply. As regards then the importance of discipline being *the* lesson to be learnt from the lecture as that item which makes a small force able to beat a large one.

In the very first battle Colonel Neville gave us we have Edward III, making a dash on Paris, thus misleading his enemy, and then suddenly turning round and doubling back to the bridge which he was thus able to seize.

Again at Talavera we have the cavalry of the German Legion pulled up in its headlong charge by the power of discipline at the very brink of the nulla on the left flank, and so saved from disaster, while the want of the same power involved the rest of the brigade in heavy loss.

Again at the Coa we have the 43rd, saving the whole force from destruction by action which none but the very highest discipline could have enabled troops to take; anything short of it would have resulted in the whole force being thrown pell mell on the bridge together and have involved destruction of the whole.

And in the other battles referred to in the lecture it is just the same; again and again we have instances of things being done which won the day, and which only a high pitch of discipline gave the power to do.

And so it will be found in every battle where a small force has beaten a large one; it will be found always owing to something being done which only a very unusually high discipline in his troops gave the commander the power to do; some blow struck suddenly and *unexpectedly*, some feint made in one direction and then the force rapidly transferred in a different direction or something of that kind. And again in almost every battle prominent instances will be found where the causes which led to defeat were brought about, not so much because the commander failed to see that if he did a certain thing it would save him, as from the inability to get certain troops to go just where and when he wanted them, or to halt just where and when he meant, or to withdraw troops from one point and to apply them promptly to another point, or to get them to fire or to cease fire just when he intended.

And again in the older wars, among the Greeks, Persians, &c., how many times was not defeat solely caused because troops launched into a charge could not be got to halt when intended. And what gained the Romans all their victories, but their power of discipline. And civilized man *ought* to be better able to acquire discipline than even the Romans.

And again we have Colonel Neville's own observation as to the rôle which will afford the only chance of success to a weaker cavalry, *viz.*, the rôle of the light weight boxer versus the heavy weight, the rôle of feint, and manœuvre, &c.

Now all these things, when translated, mean simply one and the same thing, *viz.*, *discipline*. The things which done in the past have won victory over larger forces (and which we require to be able to do in

order to win similar victories in the future) were only able to be done because there was a discipline above that of the opponents, and I am afraid far above that of the present day, though there is no reason why we should not regain it. The only way by which a small force can beat a large one is by the rôle of feint, of manœuvre, of pretending to strike here but really attacking there, of pretending to be beaten back and then suddenly turning on the enemy and beating him in detail, and so on, and so on, and so on. But these things are not even to be dreamt of by the commander of a force whose discipline is merely ordinary; only the very highly disciplined force, trained to obey instantly and no matter what the circumstances, can do such things as these. It applies of course to all arms, but chiefly to infantry, because as has often been said, in artillery we deal mainly with guns, in cavalry with horses, but in infantry with men, and men are not so easily made to subordinate their wills to that of one man as are horses and guns.

And what I want to emphasize is, that when the section commander can so hold his section in the hollow of his hand that he can deliver its fire, or stop that fire, or pour it forth again, or turn it this way or that, with the precision with which he might throw a hand-grenade; when the company commander can so hold his company like a machine absolutely subordinate to his will that (no matter what the crisis or the temptation to rush hither or thither) he can in an instant stay its course, turn it this way or that, or form a front in any direction; when the battalion commander can so hold his battalion at his absolute will that it will at a word charge, or halt, or retire, "as if on parade" under a fire which remains unanswered, then, and not till then can those things be done which enabled odds to be faced, and a small force to beat a large one. And nothing but the very highest pitch of discipline will enable the section, the company, and the battalion to act as I have described when, not a parade ground but a battle field, with all its exciting influences, is the scene upon which such action is required.

Once we had this discipline, and our infantry were pre-eminent throughout Europe for it, but, from national, political, and other causes we have declined from that highest ideal, though not perhaps as much as some of our neighbours. On the other hand we require it very much *more* now than ever before (1) because modern war requires it more than that of any former age, and (2) because the disparity in our numbers is greater than in those ages. I maintain that we can get it again if we try; but it is to be learnt in peace, not in war. *How* it is to be got is the problem of the regimental commander; backed of course by the higher authorities of the army, and of the government. But it can certainly I think be done. Only by instilling it into the man, from the very first hour he joins as a recruit, that he has got one thing to learn *absolutely*, viz., to *obey*; with the most prompt, the most implicit, the most unquestioning obedience; not that he is to become a mere unreasoning machine, but that he is to rise to a much higher ideal than that, viz., a voluntary subordination of his whole will to the will of another who commands in order that they may

jointly achieve an object to be achieved in no other way ; that he has in fact become a piece in a machine which will only work (to success) on that one condition, a machine which without this condition will crumble to pieces and involve him too in its ruin ; only thus can it be done. And as I have said the soldier of the present age *ought* to be able to acquire this higher ideal of an unwavering discipline better than the Roman soldier, or even the English soldier of a former day, and if he is but taught it in the right way *will* acquire it.

It cannot be learnt in war ; it must be learnt in the barrack room, in the orderly room, on the range, and on the training parade. The man has got to acquire a habit, one which is strange to every feeling of all his previous existence, a habit of absolute, unquestioning, instant subordination of his will to the, perhaps apparently erroneous, will of another. And it must be acquired just like other things, by practice in the very smallest details, and even in many little things in which (except in order to gain the habit) such implicit obedience would be quite unessential.

The temper of our age is against it. But unless it can be done (and I maintain that it can), to attempt the only rôle by which odds can be faced successfully is impossible ; the ship will refuse to answer the helm just at the very moment when its doing so would keep it off the rocks. It is of no use for the brain to know just how to plant a blow, and for the eye to see just where it would be effective, if the hand will not obey but wants to go some way of its own ; it is of no use for the fisherman to see just the spot on the water where the fly he throws should alight, if the hand and the rod will not obey his will ; it is of no use for the soldier to have in his hand a weapon if he cannot launch it just exactly at the spot and just exactly at the moment that his brain and eye tell him will achieve success ; the moment passes and the opportunity is gone.

Besides those indicated above, these are also many ways in regard to field training by which the power thus learnt may be increased by practice ; such as the constant practice of the kind of problems which occur in *retirements* before a superior force, the rapid taking up (against time) of fresh formations in a few minutes to meet sudden attacks from unexpected directions, the sudden change from the offensive to the defensive, and so on.

And when at last we have acquired the power of which I have been speaking, and can do with our troops the things I have indicated, *then* we need have no fear of facing odds, and an English soldier will once again be equal, (notwithstanding all improvements in weapons) to three of any other nation. For he will be one of a force which has within it the power to adopt that rôle which can alone win when facing odds.

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procurable under the conditions of active service.

1st Method.

A raft can be constructed with the following materials :—				
Each 20 feet long, of same thickness as camp	}			
Lines the ends whipped with thin wire to pre-				
t fraying and to stiffen them				
ie of rope, of same kind as above, 8 feet square,		8½ lbs.		
with meshes 4" square				
rproof sheet 8½ feet square, with eight brass eyelets				
on each side			14½ lbs.	
sets of tin cans, 11 inches each, which fit into one			40 lbs.	
another				
Total ...			63 lbs.	

EXTEMPORISED RAFTS.

By Major MASTERS, C. I. Horse.

The appearance of the report on Swimming Instruction, as carried out by the 9th Bengal Lancers, which was published in the November 1893 number of the Journal of the United Service Institution of India, has induced me to send you the following notes as an appropriate appendix:—

I have for some time endeavoured to find means whereby cavalry may be enabled to cross rivers with their arms and accoutrements complete, without the assistance of boats or other appliances which may not be procurable at the time. The men and horses can swim across easily enough; but the saddlery, arms and accoutrements of a sowar in marching order weigh 6 stone; and the difficulty is to cross these over without wetting. It will only be in exceptional cases that time or means will be available for providing boats, or for procuring sufficient materials for constructing rafts of wood, or hay, or mussuks, &c.,

On service a regiment will probably be directed to cross a river without any previous warning, and it will be thrown upon its own resources entirely, and not be able to count upon external aid.

The carrying power of the mussuks of the regimental bhisties would be a mere bagatelle to the actual requirements of a regiment under such circumstances, as a raft composed of all the mussuks in a regiment would take a long time to put together, and it would not carry over six saddles in marching order at a time, without getting them wet.

I have tried the following methods, and have obtained far better results than can be obtained from rafts of mussuks, or of any other material likely to be procurable under the conditions of active service.

1st Method.

A portable raft can be constructed with the following materials:—

Ten cords each 20 feet long, of same thickness as camp colour lines the ends whipped with thin wire to prevent fraying and to stiffen them	...	...	...	...	...	8½ lbs.
A net made of rope, of same kind as above, 8 feet square, with meshes 4" square	...	...	...	...	...	...
A waterproof sheet 8½ feet square, with eight brass eyelets on each side	...	...	...	...	...	14½ lbs.
Two sets of tin cans, 11 inches each, which fit into one another	...	...	...	...	...	40 lbs.
Total						63 lbs.

The net and ropes fit into one set of tins, and the waterproof sheet into the other; and the two packets fit into saddle bags, and may be carried on a horse or riding camel. The tin cans are made of kerosine oil tins, and numbered inside consecutively from 1 to 11; the latter being the largest size, and measuring 12" diameter by 13" high. All the tins are the same length, with round sides and flat ends, and with diameters diminishing just sufficiently to enable them to telescope into one another without sticking. Each tin has three iron Ds. size $\frac{3}{8}$ " soldered on as shewn in figure A, one being in the centre of closed end, and two diagonally opposite one another on edge of open end of tin can. Each tin has to be tested regarding its being air-tight, by forcing it under water, open end downwards, and observing whether the escape of bubbles shews any leakage.

Ten regimental lances with the above materials can, in from 12 to 14 minutes, be constructed into a raft which will carry 1000 lbs. weight.

Procedure to fix up the raft—

Arrange the five bigger tins thus (11)(8)(7)(9)(10) for one side, and the six smaller tins thus (6)(3)(1)(2)(4)(5) for another side; so also with the 11 tins of second set; the whole thus form the four sides of raft.

Each side is then put together as follows:—

Take two lances and one of the 20 feet cords, the centre of which fasten with a clove hitch on to a lance, 18" from its end; and lace the lance on to one side of the tins vide figure B, which shews the course of the cord (shewn in red) before it is tightened up. Then with the remaining half of the cord fasten the second lance in a similar manner to the opposite sides of the tins, and lastly bring the two ends of cord together again and fasten them. Figure C. shews one of the sides laced on and tightened up above and below, and finished off.

When the four sides are finished and ready as in figure C, arrange them in a square (figure D) having the open ends of tins downwards. Cross two lances for diagonals at bottom, and take two cords and clove hitch them on the centre of crossed lances at (E); and the four ends of ropes are then drawn taught towards the four corners, and the three lance ends at each of the lower corners are fastened, after which the same rope ends fasten the two lance ends of upper corners.

The waterproof sheet is now fastened in position to the upper lances along their sides, by means of a 10" length of twine in each eyelet hole. Lastly clove hitch the centres of two more cords on two upper corners diagonally opposite one another, and with an end of each rope (one for each side) lace the sides of the net through each mesh evenly along the lances on upper sides.

The raft is now ready and should next be lifted and floated on the water. The two remaining ropes are available for towing the raft.

This raft needs to be loaded uniformly all round, or extra pressure on one side will sink that end. The weight carrying power of the raft lies in the net resting on the water, which bears the load. The air-tight compartments forming the sides of the raft are intended to support only the edges of the net and waterproof sheet high above the water line. The net bears the weight of the load, which rests on the water, and is

supported by the amount of the pressure of the water thereby displaced. The waterproof sheet prevents the water from penetrating into the interior.

A single horse has with ease towed such a raft with a load of 750 lbs. of saddlery across a stream 200 yards wide ; but only a few horses are so steady that they may be trusted not to come against the raft and get speared by the projecting lance points. With judicious handling this raft is capable of effecting great results, but probably it is not suited for the rough treatment it would be subjected to at the hands of the ordinary sowar.

2nd Method.

This consists of a bag of waterproof material, with a circular bottom 38" diameter, and upright sides 34" high. vide Figure F.

To pack the kit into the bag ; the horse blanket is first doubled ; the open numdah placed in centre ; the saddle in marching order placed on numdah, seat uppermost, bridle, sword belt, stirrup irons, boots, and other kit placed under saddle ; a triangular pyramid is formed with sword in scabbard hilt downwards in front of saddle, carbine with butt end on rear side of seat, and carbine bucket attached to saddle with muzzle end raised upwards on off side ; the top of this triangle is strapped together with the centre wallet strap ; the blanket is next tied tight over all this ; the bundle is then placed into the waterproof bag and the mouth gathered in and closed. This pyramid formation gives an open space above the saddle, which makes it very buoyant in water, and it may be tilted 40° without risk of upsetting.

The whole of a sowar's saddlery arms and kit in marching order, weighing six stone, fits into this bag ; and it can be thus towed across stream by the man and horse. Or 20 such bags may be fastened in a line and drawn across a stream by a cord extending from bank to bank ; and then the empty bags can be returned for a fresh load.

This is a very simple and practical way of conveying kit across a stream, and very little time is lost in preparatory arrangements. A riding camel or pack horse may easily carry two packages each containing 10 such bags carefully packed, the weight of which would amount to 130 lbs. for 20 bags and 10 lbs. rope of 400 yards length. This would supply the wants of a squadron, or even of a regiment. As these bags will be required for use only once in a way, they should not be difficult to keep in a serviceable state.

I do not know the best method of making waterproof material, but I have been very successful with the following receipt. Bags were made of ordinary white drill, such as summer clothing is made of, double sewn and not hemmed, the flat bottoms and lower 6" of sides being doubled, vide figure F. as this part bears the pressure of water.

Eight pounds linseed oil was boiled and reduced to 4 lbs.; $\frac{1}{2}$ lb. of bee's wax was then added, the whole being heated and mixed thoroughly. The bag was covered with this compound, and put up to dry for a week or 10 days, and then it had a coating of copal varnish. The ready made

EXTEMPORISED RAFT.

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THE FRANCO AUSTRIAN CAMPAIGN OF THE 29TH APRIL TO
THE 4TH JUNE 1859.

Summarized from Prince Kraft's Letters on Strategy.

By Captain A. A. E. CAMPBELL, 25th P. I.

Note by author.—As the German publishers of the well known Letters on Strategy by Prince Kraft zu Hohenlohe refused permission for the publication of any further translation of that work in the pages of this Journal except on conditions that it was beyond my means to accept, I venture to offer a more or less summarized account of the second campaign treated of, in lieu of the translation and in the belief that it will be of interest to many.

The campaign of the 29th April to the 4th June 1859—that is to say, the development of the war between France and Austria from its commencement to the battle of Magenta—should be of all the greater interest and afford an even greater share of lessons of general value than the last campaign treated of (Jena, 1806,) in that we have here no overpowering genius such as Napoleon I. but on both sides leaders of only moderate gifts opposed to one another. Hence it is the more interesting to consider what circumstances and measures upon the one side led to victory, and what upon the other impelled to defeat. Never more true will the saying be found than here, that he is the victor who makes the fewest mistakes.

Political development.—In 1857 revolutionary movements had taken place all over Italy carried on by the emissaries of Mazzini. Piedmont had given her secret assistance, in order by their help to obtain dominion over Italy. England was not unfavourably disposed towards the revolutionists. France however had been active in helping to foil the undertakings directed against Naples. In revenge for this action the Italian propaganda decreed the death of Napoleon, and Orsini attempted the Emperor's life in January 1858. His last words seem to have made a deep impression on that monarch and to have greatly influenced his future policy. Before June 1858 signs were not wanting of a feeling on the part of the French government hostile to the position of Austria in Italy. Moreover the Austrian government became aware that the discontent amongst their Italian subjects was being fanned by Piedmont.

On the 1st January 1859, on the occasion of the New Year congratulations Napoleon said to the Austrian ambassador: "I regret that our relations with your government are not as cordial as they were; but I beg you to assure the Emperor that my personal feelings towards him remain unchanged."

All the world knew already Napoleon's practice of foreshadowing his policy by some public utterance. Though he thus lost the advantage of the political surprise, he seems to have considered such a course necessary, in order to probe the public feeling of France. No one had any longer any doubt but that Napoleon had resolved upon war with Austria. The impression produced was that of a threat.

One would suppose that now Austria would either acquiesce with Napoleon's demands or mobilize and arm with all speed. The former course meant the cession of Lombardy and Venice,—which was impossible without a struggle. War was therefore inevitable. The sword had been forced into Austria's hand.

But no cession was made, neither did she arm with energy. For four months the most valuable time was wasted. The shilly shallying of Austrian policy during that time gave an impress to the whole conduct of the war. It is evident throughout its history and proves what influence the spirit of the guiding policy has upon the spirit in which the strategy is carried out. Naturally a general who knows that his government is resolved to stake the very existence of the country on the game, if necessary, will make up his mind to fiercer battles, than one who feels that his government is disinclined for decisive measures.

Comparison of strength.—On a peace footing the Austrian field army should by law have consisted of 334,263 men, 63,539, horses and 552 guns with their teams; at war strength, of 674,033 men, 108,228 horses and 1,504 guns. The peace strength was however short by 25,000 men and 13,700 horses. The organization moreover had not been of long enough standing to supply the army with the requisite augmentation on mobilization. The war strength was consequently 55,058 men and 55,677 horses less than it should have been. The official account however states that the levies to be raised in the spring and the volunteers covered this deficiency. We may then take the strength of the Austrian army at the opening of the year 1858 at 674,000 men, 50,000 horses and 1,504 guns.

The French army in peace amounted to 390,812 men and 77,227 horses, in war to 610,435 men and 152,427 horses. To this add 209 batteries of 6 guns or 1,254 guns.

The Sardinian forces on a peace footing amounted to 49,273 men, 6,290 horses, and 80 guns, on a war footing to 86,806 men, 15,358 horses, and 160 guns, of which some 3,300 men were not available in the field.

The numbers therefore on both sides were fairly equal.

As to the marine forces, suffice it to say that the Franco-Sardinian fleet had no need for anxiety as to their troop-transports from the French to the Ligurian and Tuscan coasts.

A further comparison must be drawn between the numerical and the real strengths of the two armies.

In the first place, the French army numbered in peace nearly 400,000 men, in war over 600,000 while the Austrian army had on mobilization almost to double itself. The French therefore could be

more easily and speedily mobilized, had a longer term of peace service and would consequently be better trained.

On the other hand, the Austrian army could be more quickly concentrated on the theatre of war. It commanded two lines of rail to Verona (one somewhat broken). France had to trust to transport by sea, to which one line only led from inland, while from Genoa on to Turin there was but one line of doubtful capacity. She had also the road over the Alps. This line of communication even as late as May offered serious difficulties.

The more favourable organization of the French army consequently appears counterbalanced by the greater power of Austria to concentrate in strength on the scene of operations, especially if she took advantage of the winter, when the Alps were impassable. A further point in Austria's favour is brought out when we consider the forces to be deducted from the totals above given as being required elsewhere.

Sardinia had naturally the whole of her forces in the field, but France could not altogether deprive Algeria of her garrison, while with relations with England strained and the knowledge that the Germany that lay outside Austria could never be her ally, she could not leave her coasts and frontiers undefended. In fact a little over 300,000 men and 9,000 horses were all that France could throughout the war bring into the field of operations.

Political situation.—On the other hand Austria had little to fear from the outside. Russia, in consequence of her attitude during the Crimean war, was not on friendly terms with her, but since the failure to bring about intimate relations between Russia and France in 1857, she had nothing to fear from the former enemy of France. England had been supporting Cavour and the Italian revolutionists, but relations between France and England were strained and it was more probable that the latter would act as a friendly neutral than as a foe towards Austria. As for the Italian States, that lay outside Sardinia, these Austria had to protect and at the same time expect hostilities on the part of the revolutionists. The overthrow of Sardinia was the best means of securing these allied states and also of putting an immediate stop to the revolutionary plots. The only Austrian troops therefore not available in the field were two army corps guarding the Adriatic coasts, and the garrisons of Rastadt and Mainz in Germany.

Austria must have been fully as well informed then as we are now, of the condition and strength of the French and Sardinian forces, and the political view of the situation as above summarized, must have been quite clear to her statesmen. With Germany a friendly neutral, and Russia unlikely to move, she was sure of limiting the war, if she chose, to Italian territory. If Russia did show herself unfriendly, it was only one reason the more for putting the whole army into a condition to fight.

Austrian dilatory mobilisation.—It has been urged that there were financial reasons for Austria's dilatory mobilisation. Partial mobilisations however are false economy, for they only produce insufficient numbers of fighting men and hence lead to costly defeat. The mere

fact that the army required ten weeks to complete its mobilisation was a good enough reason for commencing betimes to arm.

Possibilities.—Had Austria ordered the mobilisation of her army the moment she received the news of Napoleon's speech to Baron Hübner, before the middle of March she would have been ready. The troops (infantry) which required less time to mobilise might meanwhile have been conveyed to the scene of operations, and allowing another fortnight for the transport of the rest, 300,000 men might have crossed the Ticino by the end of March. France up to the 20th of May proved unable to bring much over 100,000 men on to Italian territory, and in March would have been quite unable to save Sardinia from destruction. With 300,000 Austrians across the Ticino in March or April, the revolutionary outbreak in Tuscany could not have occurred and the formation of Garibaldi's free troops would scarcely have been possible.

Half measures adopted.—There is no doubt that Austria was fully aware that war was inevitable. The Austrian official account states that it was well known to the Government that warlike preparations were going on in France in December 1858. The clearest proof however is that in answer to Napoleon's speech the III Army Corps was at once despatched to Italy, a move that attracted much notice.

This insignificant strategical move did not at all correspond with the gravity of the political situation. The corps was on a peace footing, some 16 or 12,000 men strong; and such a trifling re-inforcement to the troops already garrisoned in Italy was no real accession of strength, and caused a great deal of alarm, not only because the force was despatched direct from Vienna but also because the politicals at once made as much fuss as possible about the matter.

To make such a reply as this to Napoleon's proffered challenge was to take up the gauntlet and accept combat. Had they only brought the battalions already stationed in Italy up to war strength, they would have had six times as many infantry there on the spot and have caused less commotion. Sardinia made the despatch of the Austrian III Corps into Italy an excuse for pressing on her own armament and France no longer made any secret of what she was doing.

Reasons for want of energy. The splendour in which the name of Napoleon had in the fifth decade of this century involved itself dazzled the eyes of all Europe. This monarch had hitherto carried through every enterprise he had undertaken with such deliberate calmness and had succeeded in all in such a way that every State recognised the predominance of France and none cared to fall foul of her. If then people in Austria clearly perceived that they would have to fight, it may have been that they did not care to admit it. It could not have been want of money that caused the apparent lack of energy, for, as an Austrian statesman once remarked, "Has Austria ever had any money when she began a great war!" The Austrian statesmen of 1859 were men of great ability. They could see as clearly as other men how the ship of the State was steering. The only possible explanation for the dilatory behaviour of Austria at this crisis is that her people wavered between the knowledge of the inevitable advent of the war and the hope of cir-

convenient it. They postponed the mobilisation again and again, and tried the palliatives of negotiation, until it was too late.

We have learnt from the history of the first Napoleon what a paralyzing influence a man's name may have upon Tactics. We see here the same phenomenon affecting Policy and Strategy.

First results of Austrian supineness.—So wavered Austria's policy from early in January to the end of April, between measures that reckoned on war and measures that pointed to peace. Count Gyulai, the unfortunate strategist, who was entrusted with the command in Italy from the commencement, was kept in utter uncertainty as to what his task actually was—whether to adopt the defensive or take the offensive. At one moment it was expected that Germany would join in the struggle. Until she should be ready, no offensive action was possible. Should France and Sardinia attack now, before Germany declared herself, then Austria would have to merely defend herself in Italy and the issue of the war would be decided on the Rhine. The next moment the opinion was that it would be fatal to the advantages of the initiative in Italy, to wait so long for Germany.

Gyulai's early plans.—The experience of 1848 and Gyulai's training strongly induced him to utilize the defensive strength of the famous Quadrilateral. For ten years this group of fortresses had been the pet theme of Austrian strategists. From the Quadrilateral they argued the invincibility of Austria in Italy. The idea was to take up a defensive position there, in the event of losing Lombardy, and from thence to make counter attacks on the enemy's weak points. It is a dangerous thing to give oneself up to one idea, and imagine no other eventuality possible. Napoleon I. once said "He that holds the plateau of Rivoli, holds Italy." With these words in his head Carlo Alberto marched to Rivoli in 1848. Radetzki let him quietly be drawn there, attacked him in flank and beat him. What is true of to-day, may be false under other conditions of policy, strategy and strength. Common sense must be the basis of strategy. To adhere to dead and gone systems can only lead to disaster.

Mutilated telegrams in war.—Gyulai manifested his intention to stand on the defensive behind the Quadrilateral in several memoranda despatched to Vienna. On the 1st May he received a telegram, mutilated in transit and hence instructive in a tragi-comical way, as it must have been very misleading. It ran thus, "In the present position of affairs the theatre of war is confined to Italy chiefly. In fourteen days another army corps starts from here" &c. The message reached Gyulai in this form, "In the present position of affairs the theatre of war is confined to Italy, chiefly to Verona. Daily another army corps starts from here &c.*"

Examples of such mistakes are not uncommon. In 1866 Gablenz gave orders to a brigade to march to Pransnitz (near Kaile.) It was, however, directed on Pransnitz on the Elbe, and the Prussian Guard

* "In Italian vorwiegend. In vierezhn Tagen" &c. was the original message, which in its mutilated state ran, "In Italien vorwiegend in Verona. Täglich" &c.

Corps found the debouchée of the defile opposite Eipel open and was able to attack Gablenz in rear. I had a personal experience in a telegram that ran "heute nicht" (not to-day) whereas the original order was "heute nacht" (to-night!). In 1870-71 on this account all telegrams were followed by their original written copies, a measure of foresight, the necessity for which cannot be sufficiently insisted on.

However, leaders of armies should not be tied down to the telegraph line. Their plans must be so extensive and dependent on combinations that they can not be altered off hand.

Résumé Austria.—Napoleon's new year speech was replied to by the despatch of the III. corps into Italy. There were three other corps on a peace footing in that country, the V. VII. and VIII. Sardinia and France went on with their armaments.

At the end of January Napoleon proposed a congress to settle the Italian question. On the 6th February Austria declined the proposal, and Sardinia raised a war-loan of 50 million lira.

Nevertheless no further Austrian reinforcements reached Italy. Only the four frontier battalions of the III corps stood at war strength, while the batteries of the Austrian army in Italy were raised to a war-footing with horses from other corps—a measure which permanently injured the fighting power of the whole of the rest of artillery.

On the 14th February Gyulai reported that for an offensive movement westwards he had at his disposal only 12 brigades with a total of 25,742 men, after sufficiently garrisoning the Quadrilateral. To subdue Piedmont alone he wanted five corps in the field. Against France and Sardinia combined he could with this force only hold his own within the Quadrilateral. To attack the allies he would require seven army corps. During February fresh disturbances arose in Parma, Modena, Toscana, and in Lombardy.

On the 25th and 28th February orders were first given to augment the II., III., V., VII. and VIII. corps. On the 10th March, orders were issued for the location of the necessary trains. Meanwhile Austria canvassed for the assistance of the other German states, but without much energy.

On the 1st March Count Cavour officially stated that the independence of Italy and the expulsion of the Austrians were the "conditio sine qua non" of a peaceful settlement of the inter-national dissensions. France declared that she had never had more confidence in the preservation of peace than just at this time and as late as the 5th March denied she was arming.

England sought to interpose. Lord Cowley's mission failed early in March.

At the end of the month Austria demanded the disarmament of Sardinia as a preliminary to negotiations. This step put an end to a peaceful adjustment of the quarrel, and yet it was not until the 5th and 6th April that orders were issued for the mobilisation of II., III., V., VII., VIII., VI. and IX. corps, of which the first five were already being augmented while the last two needed ten weeks to be ready. The II. corps had been announced ready to leave Vienna on the 29th March but its transport was not effected until the 13th and 28th April.

Hitherto England had stood by Austria. But a ministerial crisis came on and a change in policy. On the 3rd April England supported France.

Soon after this an inspired article appeared in the *Moniteur* and on the 19th April Cavour declared in favour of general disarmament. Meanwhile France and Sardinia continued preparations with greater zeal than ever.

On the 20th, the Austrian Government, in consequence apparently of news of the movement of French troops towards Italy, directed Count Gyulai to present Sardinia with the ultimatum, which delayed by interference from England was postponed to the 3rd. Three days' respite was proposed and refused. On the 27th telegraphic orders reached Gyulai to cross the frontier.

On the 24th April (that is, before it was completely ready) the IX. corps received orders for Italy.

On the 25th the first French troops entered Savoy and neutral Genevan territory. On the 26th the first French troops landed at Genoa. On the 25th also Gyulai reported that owing to the "rapid advance" of the French he had decided to act on the defensive. The grounds of his adopting this decision are not apparent.

Gyulai took the field with an army of five corps, one infantry and one cavalry division, amounting to in all about 150,000 men, 7,000 horses and 400 guns, including garrison troops available for fighting and Urban's reserve division detailed for the suppression of disturbances in Lombardy. Many battalions especially those of the II. and III. corps had not reached their established strength when ordered to move. In fact, had four army corps been mobilized on the 6th April a larger force would have been available than the five army corps afforded, which crossed the Ticino on the 1st May. Half measures, we see, resulted in not only loss of time but also loss of power.

During these first four months of 1859 diplomatic negotiations did not so harmonize with military preparations that the final rupture followed at the most convenient moment. Premature, or rather insufficient military measures nullified the advantage of the adroitest diplomatic negotiations. In the middle of January they afforded the enemy the desired excuse for arming openly. At the end of April they deprived the country of the assistance of Germany, when the confederation had just agreed that they only needed to be given time in order to arm. Austria, lost patience under constant and groundless provocations on the part of France and Sardinia. But a rational strategy must not allow itself to be carried away by impatience. It must not break loose before all is ready and complete. France in 1870 was led away to a premature declaration of war and to opening hostilities before her preparations were complete—with the same result.

Preparation in Sardinia.—Before New Year's Day 1859 the Sardinian Government contented itself with fostering the revolutionary spirit in Italy. After the despatch of the Austrian III. Corps into Italy a council was held on the 17th January at Turin to decide as to the fortifications to be undertaken under the guidance of the French Marshal Niel, the raising of the army to war strength, and the supply of material such as arms, clothing &c.

Although Sardinia was the most concerned in the war, she was ill prepared. Arms and clothing were not to hand. Her augmentation proceeded very slowly in spite of the favorable relation in which her peace and war establishments stood to one another. A loan had to be raised, and the fortifications raised in earth in the winter, fell to pieces in the spring. On the 20th May the Sardinian *ordre de bataille* totalled about 60,000 men and 90 guns only, being some 2,200 men and 70 guns short of the war establishment.

French preparations.—France also seems to have been unready. Before the 1st January naval preparations only had occupied the attention of the French government. However, Napoleon III. must have known the full effect of his speech to the Austrian ambassador. The Imperial marriage at Turin in January, the council of war held in the presence of the Imperial Prince, and Marshal Niel's commission to direct the fortifications in Piedmont—these facts all show that war had been resolved on from the first.

Nevertheless an army with a war establishment of 600,000 men and a peace strength of nearly two-thirds of that total could not after full four months put more than 107,000 men and 9,000 horses into the field. Supposing 50,000 men, at a liberal computation, had to be left in Algiers and 300,000 to defend the German frontier, 200,000 were still free to march into Italy. That number did eventually find their way thither, but not at the first. The first Napoleons pass-words "*activité vitesse*" had been forgotten in Paris.

In fact no great energy or despatch was employed. Six troop trains a day to the south were few, when one recollects that in 1870 the Germans were able to start 18 a day on each line.

On the 10th April orders were given for the transport of 50,000 men by rail and sea from France to Piedmont, and the concentration of 25,000 men on the Savoy frontier was publicly notified. No attempt was made at concealment, indeed foreign railways were partly used. The numbers were insignificant and stamp the movement as a half measure. Probably Napoleon had just discovered that his army was not as prepared as he had assumed it to be, and this will account for the concessive spirit he showed about this time for the purpose of gaining a little time. War at all events he was resolved upon.

OPERATIONS OF THE AUSTRIAN ARMY FROM THE 30TH APRIL TO THE 6TH MAY.

Advance into the Lomellina.—The Austrian ultimatum dated the 19th April was on account of protests from England not delivered until the 23rd. On the 26th the Sardinian government refused the conditions. On the 27th telegraphic orders were received from Vienna to cross the frontier. On the 30th the army crossed the Ticino.

Criticism on the slow action here taken by Austria is scarcely necessary. Means might have been adopted to ensure a delay of only a few hours, instead of several days. In strategy the loss of a single day may upset every thing.

Up to the 27th April the fault of the delay lay with the politicals, but no reasons are given why the commander of the army did not cross the frontier on the 28th instead of on the 30th. Probably his reluctance to assume the offensive was the cause of his not being already concentrated on the Ticino, and of his having to spend the 28th and 29th in the march up to that boundary.

Position of Austrians on 2nd May.—The army, consisting of five army corps—II, III, V, VII, VIII—a cavalry division and an artillery reserve marched on a wide front, and advanced on the 30th April from the Ticino to the Terdoppio, on the 1st May to the Agogna, and on the 2nd May from the Agogna to the Sesia--Po. No enemy was encountered, a few troops and some guns were seen moving on the further banks of the Po. The inhabitants of the Lomellina were well-disposed.

On the evening of the 2nd May the position was as follows, beginning from the left :—

VIII corps at Pieve del Cairo on the Po with one brigade behind observing the lower Po.

III corps at Torre Beretti on the Po.

V corps at Cozzo—Candia opposite junction of Sesia and Po.

VII corps at Robbio and Rosasco, northwards to Vercelli, and holding the passages of the Sesia.

II corps, at Mede, in support of the VIII or III.

Artillery reserve at Ottobiano and cavalry division at Trumello in rear.

The front of the army extended a little over 27 English miles.

The III corps received orders to reconnoitre the bridge over the Po at Velenza on the evening of the 2nd, and at day break of the 3rd to take and destroy its defences on the Austrian side of the river, to blow up the bridge and to break up the road from there to Torre Beretti.

This and the leaving behind of a brigade of the VIII corps for the observation of the lower Po point to an intention to act at that point strictly on the defensive and to press forward across the Sesia against Turin.

Lengthy despatches.—The orders giving the details of these dispositions are very lengthy and minute. They deal with matters, which the corps ought to have settled for themselves. Brevity in the issue of orders is of extreme strategical importance. In the first place, an order should be intelligibly drafted and despatched at the right moment. It will then be carefully read and executed. Lengthy orders will generally not be opportune nor skilfully drafted, and will reach corps late, when every one is tired out. It should not be so but is only human that main points in that case should be overlooked. The disastrous effect of too much detail was exemplified at Austerlitz, where Wairotter's disposition for the Austro-Russian army had not been completed in writing, when the fight began. The apparent sluggishness of Austrian troops in almost every war is largely due to the fondness of their staff for long-winded documents. Better than lengthy dispositions are none at all.

Regulation of supplies.—In Gyulai's army requisitions for supplies could only be made through the brigade commissariat officers under the direction of those of the corps, and the distribution of supplies followed through the same channel. Now in war, supplies cannot be distributed at the proper time if the requisitions are concentrated in the hands of a corps commissariat, because the number of recipients is too great for any but the very few to get their supplies at the proper time. The consequence is that the troops either starve or help themselves by culpable excesses—commonly both. Draconic orders of Gyulai's prevented the excesses. So no wonder there were complaints. In the middle of one of the richest districts in Europe, the Lomellina, the inhabitants being not ill-disposed, many of the troops suffered bitter privation. Later on matters grew worse through constant counter-orders and changes of plan.

To allow troops to take what they can find no doubt easily degenerates into plundering, and plundering uses up the means of subsistence prematurely through waste, and ruins discipline. But there is a great difference between plundering and organized requisitions or exchange of ready cash. Ready money wins sympathies.

Requisition system.—The requisition need not be made under the direction of the commissariat. A general who insists on this system transfers the responsibility for the supply of his troops from himself to the commissariat officer and submits to the rules the latter makes.

In time of war unless there exists a regulated system of self help working hand in hand with the commissariat, the commissariat is always late with the provisions. The fault lies not with them, but with the organization and peace training. Supposing, as in this campaign, the corps have a Commissariat Staff, while the Divisions have none. The issue of rations to the whole corps cannot possibly be properly timed if it is made from one central depot to all the troops of the corps, especially if they have had a march that day. Even when each Division has a Commissariat Staff, this is impracticable, except when the troops bivouac concentrated. But if troops are billeted and cover an area of about four square miles per division, when are they to eat, if after their march they have to get their rations at the central depot?

As a matter of fact, the effect of its peace training is to make the Commissariat Department with its regulations and orders behind hand in time of war. In peace, account must be taken of every grain of oats, and all settlements must be as fair as possible and so as to spare the people of the district. For manœuvres that last a week, the department begins its preparations weeks beforehand. Accustomed to these formalities by a long peace practice the commissariat official makes calculations, thoroughly impracticable, for as soon as the least unforeseen vicissitude takes place, his plans are all out of gear. Some provisions cannot be laid in long beforehand. In 1866 we found loaves of bread piled up at Pardubitz, which were to have supplied the Austrian army for ten days. What a state of mouldiness the last of these would have been in, had they ever been issued to the unlucky men, for whom they were intended!

"A hungry soldier cannot feel brave," old Radetzky once said to me. There have been glorious exceptions of course. But the efficient nourishment of man and horse is one of the foundation pillars of strategy.

When in 1866 the arrangements for the supply of the reserve Artillery of the Guard Corps fell to my lot, I laid my plans with a lively recollection of old Radetzky's words. My very zealous Commissary's proposals must have led to my men always getting their food two days late. I set to and so far succeeded that not a single man or horse suffered privation, and that although after Königgrätz I marched through districts, which had already been traversed by the retreating Austrians, and by two Prussian corps! In 1870 the Guard Corps was cared for in exactly the same way and with equal success, except on the day of St. Privat.

To explain the system followed:—by a "requisition" is meant what the troops raise for themselves, by a "supply" what the Commissariat furnishes, whether they have procured it by requisition or through a contractor.

Troops have to "requisition" their daily supply and to make a daily report of the result. At the beginning of the campaign they receive a three day's supply, replaced on consumption. In accordance with the daily reports the Commissariat are able to calculate how much is to be made up in supplies to each unit and has always up to three days' time to do so. Meantime the commissariat collects materials by indents on the district. For this purpose they apply to the superior district authorities, whilst the requisitions of the *troops* are made first on the village authorities and only in extreme necessity on individuals.

To obviate excess, and to preserve discipline, receipts or ready money must be given for a requisition, and the transaction can only be through an officer. The only units authorized to requisition are, in the Infantry battalions, in the Cavalry regiments, in the Artillery brigade divisions. Smaller units can only requisition when so detached as to be unable to get the day's ration from the battalion &c.

Meat.—The reason for this particular limitation of authority is that one fat ox suffices for one day's rations for an artillery division or a cavalry regiment, and two for a battalion. In case of lean cattle of course this number must be doubled. If therefore a company, a squadron, or a battery slaughters an ox, material is wasted.

To these units moreover are attached paymasters who keep an account of all money transactions over requisitions and supplies.

Bread.—It is not good to supply bread, contract loaves are issued stale, often green with mould, and bring on sickness. It is better to supply flour. As a makeshift for days when bread is not to be had in this way, our provision columns carry biscuit.

Wood and water.—The men fetch wood and water, where they can find it.

To avoid disputes between the different troops, requisition circles are told off to the groups of billets or bivouacs. In bivouacs the men usually live on the iron ration or commissariat supplies.

The Austrian Commander-in-Chief was a stern disciplinarian. But if it is true that he forbade the mulberry trees on the roads and bivouacs being broken down for fire wood, he went too far in his desire to spare the district. It is impossible to bring troops in bivouac the amount of wood daily required in addition to other daily requirements.

The Commissariat cannot know how things go on among the troops what hardships regulations for their feeding often unnecessarily lay upon them, and how to avoid them. The Commander of the troops alone can judge of this correctly, because he is intimate with the interior machinery. In his co-operation, therefore, must be found the proper corrective for unpractical measures.

Meat and bread have been alone mentioned, because they are heaviest. Other necessities, such as compressed vegetables, rice, salt, coffee, tobacco, may well be supplied by the Commissariat. Potatoes and oats the troops must be allowed to requisition.

Attempts at crossing the Po 3rd, 6th May.—The 3rd May.—On the 2nd it had appeared as if the Austrians had determined to hold the Po at Valenza and advance at once across the Sesia on Turin. Nothing had been seen of the enemy, and their only trustworthy information had been received from Vienna. A Sardinian army was supposed to be united about the position of San Salvatore, and on this day Gyulai changed his plans and made as if to attack it before the French in any numbers reinforced their allies. Whether he acted on orders from Vienna or of his own accord, is not certain.

The III corps were sent orders to force the bridge at Valenza, which it had not yet destroyed. The II. corps was to throw a bridge at Bassiguana and cross the river. Demonstrations of crossing at Cambio and Porto Cornale were to be made by the VIII corps, which was eventually to follow the II, while the V was to create a similar alarm along the Sesia and Po and follow the III at Valenza. Finally the VII. was to cross at the same point.

What actually occurred was as follows :—The III corps did not get these latest orders in time, and although they might easily have taken the bridge on the 2nd and crossed, they proceeded with the task of destroying it. They alarmed the enemy. There was a great deal of cannonading, but little damage done on either side.

The VII corps forded the Sesia at several points and scoured the country to about five miles beyond, but were compelled by a sudden flood to return. A demonstration of crossing the Po also drew a considerable force of the enemy upon it, but here too not a fire was attended by insignificant results.

Troops of the VIII corps crossed in boats to islands on the Po, but withdrew without having sighted the enemy.

Meanwhile a bridge over the Po at Vaccarizza and a bridge-head on the further side were prepared, and the Gravelone was put into a state of defence at the mouth of the Tieino. These measures were taken in view of a retreat through Pavia!

The II corps reconnoitred the roads and concentrated at Mede.

The VII corps had to remain on the Sesia and reconnoitred from Vercelli towards their front and into the hills on the right flank.

Whilst Gyulai's orders for his last change of plan were still on their way to his different corps, he had news from Vienna that 50,000 French were directed on Casale and Alessandria, that Bouat's Division had reached Turin over the Mont Cenis, that MacMahon had left Genoa, and that large reinforcements were being despatched from Toulon, Marseilles and Briançon. Accordingly on the evening of the 3rd May Gyulai gave up his plan of pushing through at Bassignana.

4th May.—The III corps now received orders to destroy the bridge at Valenza. The material, however, offered an unexpected resistance. A rise in the river flooded the mining chambers, and the explosion was not effected until the 8th May.

The VIII corps was directed to throw a bridge over the Po at Cornale seven miles below Bassignana and to cross over. The passage was affected. No enemy was seen, and the corps advanced about five miles southwards and put out out-posts.

The II corps was stationed in support at Sannazaro and Lomello. The III corps remained at Valenza. The V made a demonstration at the mouth of the Sesia. The VII received no orders on this day and concentrated one division at Vercelli, the other to its left on the Sesia.

It is difficult to perceive what object was gained by putting the VIII corps into so dangerous a position across the Po. In his orders to the corps Gyulai states that he purposes giving up the line Pavia—Lomello for that of Milan—Vercelli, and that the VIII corps is to protect his flank. The passage of the river by the VIII corps roused the liveliest apprehension among the enemy that the Austrian army was on the point of pushing forward in full strength at this point to surprise the allies. Extensive measures for defence were taken in the Serivia valley.

5th May.—When the dispositions for the 5th May appeared, the army found that it was, with the exception of the VIII corps, to fall back upon the line Milan—Vercelli. The VII corps was to concentrate at Vercelli, the V to march to Robbio, the III to Candia and Cozzo, the II to Mortara and Cernago, the cavalry division to Nicorvo and the artillery reserve to Mortara.

But suddenly the Po rose, hindered, as before related, the destruction of the bridge at Valenza, broke down the one at Cornale and cut off the retreat of the VIII corps. A rapid advance on the part of the allies would have enabled them to deal this corps the fate of Mortier at Dürrenstein in 1805.

Upon this the remaining corps were all directed to hold their ground. As however, the orders to this effect were only despatched at 6 A.M., it is unlikely that they would have been in time to stop the troops altogether. To put an army corps into motion is an affair of time, whether it has one mile to cover or three, and most of the troops on the 5th May must have been well under weigh before the counter orders reached them, and have had some tiring marches to and fro to carry out. The VII corps sent scouting parties beyond the Sesia, and found no enemy, but well disposed inhabitants who even with great good will set to work at the broken roads.

6th May.—On the morning of the 6th May the Po had fallen sufficiently to allow of the repair of the pontoon bridge. This was complete by the afternoon and the VIII corps defiled back until 11 o'clock at night, scarcely molested at all by the enemy, and proceeded to Pieve del Cairo, Mezzanabigli, and Sannazaro.

The II corps made room and marched to Cernago and San Giorgio, the cavalry division to Nicorvo, the Artillery Reserve to Mortara. The VII corps put Vercelli into a state of defence. Across the Sesia there was skirmishing with Garibaldi's volunteers at Balzola and on the canal at Popolo, and it was ascertained that being supported by a Piedmontese Division they had advanced from Casale northwards, had however only taken supplies from the district and then returned to Casale. Near Valenza the enemy appeared to be diminishing his forces.

7th May.—*Advance towards the Dora Baltea.*—On the 7th May the offensive was to be taken against Turin. With this view the outposts of the VII corps were pushed nearly 14 miles beyond the Sesia as far as Santhia; one brigade went to Stroppiano and the neighbourhood, one to San Germano, and a demi-brigade, whose patrols reached Biella without meeting any of the insurgents, to the right to Carisio. The other division of the corps remained at Vercelli.

The Cavalry Division marched into bivouac at Vercelli (12 miles.)

The V corps marched to the neighbourhood of Rosasco and Palestro (about 9 miles,) so as to be ready to cross the Sesia at Palestro the following day. The III corps moved into bivouac near Cozzo (9 miles.)

The VIII corps left two brigades under General Lang at Lomello to observe the Po and to scout towards Alessandria and Voghera. The rest of the corps marched to Mortara, (rather under 9 miles.) The II corps marched to Nicorvo (9 miles,) the Artillery Reserve to Robbio, (7 miles.)

On the whole the army on this day made a move to its right (northwards,) rather than to its front, and finally stood concentrated on the Sesia from Vercelli to the junction of the Sesia and the Po, the reserves at Mortara and Nicorvo, $4\frac{1}{2}$ miles in rear.

Of the enemy scarcely anything had been seen. Only at Valenza guns appeared on the right bank of the Po, the projectiles of which showed that they were rifled—proof that they belonged to the French Artillery.

May 8th.—The VII corps advanced about 4 miles only, the roads being much cut up, and halted with its head at Tronzano, its rear at Cassine di Strà. Its right column occupied Biella, and scouted to Ivrea on the Dora Baltea, and discovered the falsity of the reports of spies as to the presence of 75,000 French in Biella and masses of the enemy at Ivrea, for they found no one. Another scouting party alarmed the bridge-head at Casale.

The II corps followed the VII *viâ* Vercelli and took up a position on its left rear.

The Cavalry Division remained in bivouac at Vercelli.

The V corps crossed the Sesia at Palestro by a pontoon bridge and pushed its foremost troops as far as Stroppiana, Pertengo and Costenzana, about five miles beyond the Sesia.

The III corps marched, after blowing up the bridge at Valenza, about five miles to its right, to Torrione, its rear at Candia.

The main body of the VIII corps made a march of seven miles from Mortara to Robbio, most fatiguing to the men as it crossed the columns of the II and III corps.

The Artillery Reserve moved to Borgo Vercelli.

Thus on the 8th May three Army Corps had crossed the Sesia, advanced posts on the Dora Baltea, Two corps, the cavalry division and the Artillery Reserve were still to the east of the Sesia.

Urban's division was directed to advance in as great strength as possible south of the Po upon Stradella, to be ready to crush any rising in Lombardy but not to advance too far from its base Pavia—Piacenza.

Nothing was seen of the enemy this day.

The day's movements show the evil consequences of the crossing of columns on the march. By good management on the part of the staff, this can always be avoided, except under unforeseen and unforeseeable circumstances, as for instance with Napoleon I in October 1806 (see *Letters on Strategy*, Part I.) Here there was no such necessity, and yet the VIII corps was tired out in a march of seven miles.

Further it is not clear why so many of the troops on the 7th and 8th May had to bivouac. The marches were short and not in the presence of an enemy. To impose such useless hardship on the troops only injures their fighting efficiency.

9th May.—On the 9th May the V and VII corps had orders to advance to the Dora Baltea, the II. corps to support, the other troops to remain halted. The movement was in progress, when at 9-15 A. M., counter orders were issued. The army started to march back. This was what occurred.

The VII corps gained touch with the enemy, was then obliged to turn about and returned to Vercelli, both divisions bivouacking still on the enemy's side of the town.

The V corps was on the march, when at 10-30 A. M., came orders for it to return to Palestro covered by a strong rear-guard, one division to make its way from Tricerro to Vercelli. At 12 noon the corps received a third order, namely, to halt at Tricerro and to leave a strong rear guard in front of Casale. At 2-40 P. M. a fourth order arrived, to halt on the heights of Prarolo and Pezzana on the enemy's side of the Sesia. Finally at 8-30 P. M. a fifth order was received, to begin recrossing the Sesia at once. This it was impossible to do. The corps halted that night with a brigade each at Stroppiana, Asigliano and Desana, and the rest about Prarolo and Pezzana.

The direction of this corps having been changed four times during the day would lead one to suppose that something extraordinary was afoot. As a matter of fact there was no such cause, and the changes can only be attributed to conflicting counsels among the Staff. Anyone who has any experience of large bodies of troops on the march, can ap-

preciate the confusion and hardships attendant on changes of direction *en route*. The V corps must have been greatly fatigued, supplies cannot have reached it and yet in the evening it stood on the very ground it had occupied that morning.

The II Corps was directed to recross the Sesia, and to take post between Torrione and Vercelli. It found the roads blocked, had to make wide detours, and got into bivouac at Robbio between 11 and 3 o'clock at night.

The III Corps was ordered to bivouac above Castel d'Agogna *à cheval* of the road from Mortara, front to the Agogna. It had hardly 7 miles to cover. Yet starting at half-past 2 in the afternoon it only got into camp at 4 o'clock next morning. The roads were blocked by the VIII corps.

The VIII Corps was to have marched from Robbio to Trumello, but was so done up by its march of the day before, only completed at 4 o'clock that morning, that it fell short of its destination. One brigade of this corps was then sent to Vaccarizza below the junction of the Ticino with the Po to hold the bridge over the Po and build a bridge-head. It reached Vaccarizza on the 11th May.

Vague information of the enemy came in this day. Lang reported that his scouts had seen nothing but that the French Emperor was expected and according to rumours of the country people the allies were concentrated between Tortona and Alessandria. Troops were reported to be concentrating at Valenza, but none were to be seen further down the right bank. From Vienna came news that up to the 6th May 40,000 French had landed at Genoa, 30,000 of the 3rd corps had arrived at Turin and two divisions each of the 4th corps and Guard were on the march.

Gyulai in his report to the Kaiser called his advance to the Dora Baltea a reconnaissance and stated that on finding the enemy had abandoned that line he had retired again with a view to taking up a defensive position in the Lomellina. His Majesty, he said, had approved of this plan, the army being too weak to assume an offensive role. This approval was however never expressed. His advance to Ivrea had roused the liveliest apprehension among the allies, and it was with the greatest astonishment that they saw his eventual retirement.

10th May.—This day the VIII Corps marched 9 miles from Trumello to Lomello, and resumed its observation of the Po. Lippert's Brigade of the II Corps was attached to it.

The III Corps remained at Castel d'Agogna, one Brigade on the Sesia.

The II Corps moved to Albonese, $4\frac{1}{2}$ miles north of Mortara.

The V Corps marched, partly by Palestro, partly through Vercelli over the Sesia by Palestro into camp at Mortara, a march of 27 miles for some of the troops, the tail not getting into camp till an hour after midnight. The bridge at Palestro was destroyed.

The cavalry division marched from Vercelli into camp at Nicorvo.

The VII Corps withdrew across the Sesia and took post on that river from Palestro to Vercelli.

Reports of pursuit by masses of the enemy disturbed the march. Gyulai therefore directed the evacuation of Vercelli, in spite of its fortifications. It afterwards proved that the pursuing enemy consisted only of patrols.

The Artillery Reserve went to Bogo Lavezzaro.

The sum of the day's operations was the completion of the retreat over the Sesia and the assumption of a central position about Mortara, with 6 brigades on the Sesia from Vercelli to the Po and 5 Brigades along the Po as far as the Ticino.

Gyulai sent the siege park to Mortara, a proof that he had no more thoughts of an offensive. Some days later the ammunition for this artillery was brought into Pavia.

No information was had of the enemy.

On the Defensive in the Lomellina 11th May.—On the 11th May a halt was made. Only the Artillery Reserve was moved to Trecate to the north. All the news gathered was, that about Voghera and Stradella the allied forces were expected. This again roused Gyulai's anxiety for his left flank, for he telegraphed to Vienna that the enemy appeared to intend operating south of the Po against Piacenza. The day was spent in improving communications within the position.

12th May.—On the 12th the Artillery Reserve was again dragged southwards, this time to Vigevano on the Ticino. Very little was ascertained about the enemy. Patrols from Vercelli found the ground just abandoned between the Sesia and Dora Baltea swarming with the enemy's scouts and Garibaldians. Some rencontres took place, and the rumour was that the Free troops were about to move northwards by way of Gattinara and threaten Novara.

Spies reported that Casale was weakly held and that the enemy's main army was marching on Tortona. These spies were probably in the pay of the French, for the information was false, as information given by such persons very often is.

In an army order the Field Marshal informed the troops of the object of his position. Too weak to attack the foe "in his fortified positions" he would await him from the Lomellina and fight him in the open, wherever he should show himself.

13th May.—On the 13th the army moved into a more extended position for the greater comfort of the men, at least a portion of whom could now get the shelter of a roof.

II Corps to Albonese.

III Corps to Mortara, one Brigade on the lower Sesia.

V Corps to Trumello.

VII Corps to Robbio, one Brigade at Vercelli.

VIII Corps to Lomello, two Brigades on the Po, one at Vaccarizza.

Cavalry division to Vespolate.

Artillery Reserve to Vigenano and Bereguardo.

Thus on the circumference of the semicircle formed by the line of the Sesia—Po from Vercelli to Vaccarizza stood the VII Corps, one Brigade of the III Corps, and three Brigades of the VIII Corps, total

9 Brigades. The remainder, 16 infantry brigades, the cavalry and the Artillery Reserves stood in the centre of the semicircle in such a position that they could reach any point of the circumference in a day's march, assuming good telegraphic communication, quick issue and prompt execution of orders. Vaccarizza alone was two marches from most of the troops, but the enemy also could not reach that point in any strength unobserved.

It was ascertained that a considerable force of the enemy was collected at Valenza and Bassignana, that the Emperor of the French had landed at Genoa and was expected in Alessandria on the 13th. A foraging party from Vercelli had a slight skirmish four miles west of the Sesia with riflemen of Garibaldi's force. Urban reported that Garibaldi with between 3,000 and 12,000 men was about to push through the mountains round the right of the Imperial army and operate in its rear by way of Como upon Bergamo; further that the harbour of Spezia was unoccupied; Voghera and Tortona were still unoccupied on the evening of the 11th.

The intelligence of the threatening of the right flank was scarcely regarded. Urban was ordered to remain south of the Po until relieved by the IX Corps, not to push his main body beyond Casteggio but to scout towards Tortona, the Scrivia, and the Apennine passes. The IX corps had been expected since the 10th, but reported that it could not commence arriving before the 16th. Two of its Brigades were not to be relieved at Trieste before the 17th or 18th. Urban had already had orders to return to Lombardy on relief, and detailed instructions were sent to Trieste to the IX Corps as to its distribution on arrival.

The vicissitudes of war are such that it is impossible to arrange beforehand what is to happen four to eight days later, and detailed dispositions of the kind only do harm. They absorb the working energy of the Staff, lead to confusion and are sure to omit something which will not fit in afterwards. General instructions to a corps are sufficient, the particulars must be left to the corps commander.

The I and XI Corps, hitherto reserved to form the Austrian contingent of the Federal troops in case of Germany taking part in the war, were now directed to reinforce the army in Italy. Their mobilisation was incomplete, and the date of their arrival therefore uncertain.

14th and 15th May.—On the 14th a brigade of Urban's marched to Voghera and found the defile of Pontecurone held. In the retreat next morning to Stradella three hussars were attacked by peasants and one slain with pitch-forks.

At Vaghera it was ascertained that the majority of the French troops had reached Alessandria *via* Turin, and that their army was posted along the line Bosco—Alessandria—Casale, that the French Emperor was at Alessandria, and that a general attack was projected. An Austrian detachment of two companies penetrated the Apennines as far as Bobbio on the 11th and returned to Piacenza on the 15th. They had surprised Bobbio but on attempting to get on to Varzi found the passes held by peasants and free troops. These two raids roused the anxiety of Marshal Baraguay d' Hilliers for his right flank, and he had the passes of Torriglia and Varzi in the Apennines rendered impassable

An army order of the 15th May was issued on the subject of the defensive tactics adopted. It assumes various possibilities and clearly prescribes what is to be done in each case, contains a good deal about retirement, even to behind the Ticino. The possibility of the enemy doing what they actually did, namely advancing in full force through Vercelli was not taken into consideration. Clausewitz used to say. "There always are three alternatives possible, and when you have provided for all these three, a fourth steps in." In my first letter I laid down the principle that a strategist must have a remedy ready for every eventuality so as not to be taken by surprise. But there is a great difference between thinking a matter out and giving expression to it in orders. Discussion does not belong to the latter at all.

Under Gyulai's orders the bridge over the Sesia at Vercelli was blown up. Scouts from the VII corps reported no enemy in strength beyond the Sesia, which served to confirm the idea that the enemy's main forces were concentrating at Alessandria.

16th May.—On the 16th Gyulai issued an order to the effect that patrols were to always be of considerable strength and when possible of both cavalry and infantry. This was to prevent isolated troopers being cut off by the peasantry, but it had strategical effects, for it paralysed the whole intelligence service. Cavalry might as well have been dispensed with in the army altogether.

The 1st brigade IX corps marched into Placenza. Most of the rest of the corps followed on the 17th and 18th, a few battalions not till the 23rd. This corps had no artillery nor cavalry and was assisted by detachments from the artillery reserve and cavalry division.

17th May.—Because the enemy had on the 15th outposts on the islands of the Po, because two battalions had been seen on the march from Valenza to Bassignana, and because he was evidently diminishing his forces near Valenza, Gyulai apprehended an advance eastwards combined with an attempt to cross the river at Pieve del Cairo. He therefore instructed Benedek to shift the centre of gravity of his corps (the VIII) to the left flank, but thin the support of the V and held in prospect that of the other corps.

A party of 18 men crossing the Po at Valenza spiked some guns left there and reported no enemy in the nearest villages. Towards evening the enemy reappeared at Valenza and near the bridge head at Vaccarizza.

18th May.—Benedek had drawn his corps closer together and so disposed it that in case of the enemy attempting the passage at Pieve he might hold him with a few of his troops and attack his right flank with the rest. Early on the 18th a cannonade arose; the only result being the destruction by guns of the VIII corps of an old boat bridge on the further bank of the Po. The II corps took ground behind the VIII between San Giorgio and Cernano, while the V stationed itself along the Po from Sannazaro to the Ticino.

A reconnoitring party from Vercelli discovered a cavalry division and free troops at Sau Germano. At other points troops were to be seen moving in all directions and the rolling of heavy waggons was to

be heard. On the Po, columns of French and Piedmontese were said to be marching eastwards on Cornale. Bobbia was found reoccupied by the French on the 17th.

On the strength of this Gyulai held his left flank to be seriously threatened.

19th May.—Accordingly on the 19th May, whilst the VIII, II, and part of the V corps stood fast, the VII corps forming the right wing was withdrawn from Vercelli and marched to Mortara and Castel d'Agogna, leaving a small post of observation towards Vercelli and Palestro and a brigade on the Sesia. The III. corps moved to Trumello. Three brigades of the V. corps marched to Vaccarizza with a view to a reconnaissance in force next day towards Voghera. The cavalry division remained halted.

Numerous reports showed that the enemy was showing great activity all along this front. One message brought by a spy announced a general attack across the Po, Casale, Voghera, and Cervesina with a feint from south and west on Stradella. That the spy had been tampered with there can be little doubt. Nevertheless this confirmed any doubts there might have been amongst the staff as to the point of danger, viz., the left flank. A report that the enemy was gathering in and about Vercelli, received on the 19th evening, effected no change in the plans determined on for the 20th.

As a matter of fact the Sardinian army crossed the Po at Casale, this very day, the French remaining halted. News of Garibaldi's entry into Gattinara was not received until the 20th evening.

Orders for the 20th were now issued. In the Austrian official account these take up over six closely printed large quarto pages, not including orders for the column magazines. Again three alternatives are assumed, not one of which was realised.

Count Stadion commanding the V corps was to take his three brigades and the brigade of the VIII corps at Vaccarizza, one brigade of the IX corps and one of Urban's division and make a reconnaissance in force towards Voghera to ascertain whether it was intended to make the main attack on the right bank of the Po. If he met with superior forces and the enemy assumed the offensive, he was to retire on Vaccarizza and watch the Po from there to Spessa. Further, if on the 21st the enemy attacked between Casale and the Ticino and attempted the passage of the river, which he would be able to ascertain by the sound of the guns, he was to draw as many forces as possible on himself by an energetic offensive on the south bank. Should neither of these things happen and should he meet only inferior forces in his reconnaissance, he was to return on the 21st into the Lomellina.

It is to be remarked that this reconnoitring force was made up of troops from four different corps, although Stadion's 3 brigades might easily have been augmented by 3 brigades from either the IX corps or Urban's division. It was moreover most hazardous to make such a strategically important resolution as Stadion was to take on the 21st, dependant on catching the sound of the guns. The sound of the guns is most misleading. Shells may often fly over head without the sound

of their discharge being heard. Further, 6 brigades only were employed, although almost all the IX corps, 3 brigades of Urban's, 3 brigades of Stadion's and one brigade of the VIII corps were all at hand, troops which in case the enemy crossed the Po in a northerly direction, would be too distant to be of any use. Finally the course of events will show that Stadion could not possibly direct his troops in the manner prescribed for the 21st which shows how futile and harmful it is to make detailed arrangements in face of the possibility of a fight with all its uncertainties. Stadion was also to guard his left flank, as 4,000 of the enemy were at Bobbio.

20th May.—Montebello.—On this day Stadion's reconnaissance in force led to the battle of Montebello. The Austrian troops advanced to Montebello and soon after midday seized the town and the position of Genestrello on a spur of the Apennines and commanding the plain. They were at once attacked by the French from Voghera. A sharp, somewhat fluctuating struggle took place. At half past seven in the evening on the approach of the reserves in the shape of Bazaine's division Stadion was compelled by his orders to retreat. The enemy did not pursue, but withdrew to Voghera the same evening.

The Austrian loss in "missing" tells plainly how hazardous such reconnaissances in force are, if instead of precluding further offensive action they involve giving up the ground won. A withdrawal, from hand to hand combat especially, cannot be effected without losing prisoners—a moral and material loss. Clausewitz somewhere remarks that a man resorts to a reconnaissance in force as a sop to his conscience, when he feels that he must do something but cannot decide what that should be.

The main result of the battle was that Gyulai became more certain than ever that his left flank was threatened. In which we know that he was entirely mistaken. On the other hand the French, who had commenced to move off towards Vercelli, became alarmed for their right flank and communications, from which we again see that the initiative is always good for something, even if not directed upon exactly the best point.

21st May.—Making certain of a hostile advance south of the Po Gyulai ordered Stadion with the three Brigades of his own corps, one of the VIII and one of the IX to stand fast at Vaccarizza. Four brigades of the IX corps were echeloned south of the Po from Piacenza to San Giovanni. Urban crossed the Po to Corte Olona with orders to secure the bridges over the Adda.

The VIII corps observed much stir and animation beyond the Po but reported that the enemy was not preparing to attack.

On the other hand the enemy made his appearance in serious earnest on the Sesia. Colonel Ceschi, left with a demi-brigade at Borgo Vercelli, reported that since the 20th evening masses of hostile troops had been seen gathering above and below Vercelli, from Villato to Palestro, and that Garibaldi had entered Romagnano on the 21st, thus turning the right flank of the army.

Thereupon the VII corps early on the 21st pushed closer to the Sesia, to Palestro and Candia.

While still adhering to his opinion that the enemy on the Sesia could only consist of Garibaldi's free troops, the Austrian Commander-in-Chief nevertheless held the II corps in reserve near Castel d' Agogna ready to support the VII. Colonel Ceschi was directed not to engage, but to retire on Novara, should the enemy advance.

Meanwhile the enemy crossed the Sesia near Vercelli and drove Ceschi back. He retired behind the Agogna towards Novara.

22nd May.—On the 22nd the VII corps advanced to repel the enemy. Only a few cavalry had crossed at Palestro itself. These soon fell back across the river, but a lively cannonade was opened from the further bank, upon which the VII corps halted to abide the issue at Palestro. Ceschi reinforced by some cavalry advanced again to Orgengo. At Borgo Vercelli a brilliant cavalry combat resulted in the evacuation of that place by the enemy. The VII corps returned to Castel d' Agogna without re-securing the passages of the river at and north of Vercelli. Intelligence arrived that Garibaldi was pressing on to Arona on the Lago Maggiore.

On its return to Castel d' Agogna the VII corps heard of an attempt to cross the river opposite Candia. The brigade there, Dondorf's, had seen such energetic preparations for the passage at four different points and such masses of troops, that it concentrated and sent for reinforcements. The corps headquarters was not at Castel that day, but the II and VIII corps sent various brigades in support. These were ordered back again by the headquarter staff of the army, after very fatiguing marches and counter-marches. The staff found serious fault with the VII corps for getting unnecessarily alarmed and reiterated their conviction that these were only Garibaldian demonstrations.

As a matter of fact three French corps were on the line Voghera-Casteggio, the rest at Alessandria. But almost the whole Piedmontese army was on the Sesia, one division (Cialdini) already on the left bank between Vercelli and Borgo Vercelli, and Garibaldi at Castelletto on the Ticino.

Urban marched to Brescia and Lodi and resumed his original task of repressing attempts at insurrection. The IX. corps stood fast south of the Po.

From Vienna news arrived that the I corps would commence to arrive on the 30th. Arrangements were at once made for both this corps and the XI, which were, however, doomed to be upset.

At midnight orders were issued for the III, VII and VIII corps to be ready to march at day-break on the 23rd.

23rd May.—Except, however, that the VII corps sent another Brigade to Candia, the Austrian army on the whole stood fast.

Colonel Ceschi (replaced in the course of the day by Colonel von Mengen) undertook a weak reconnaissance towards Borgo Vercelli, but found it unoccupied, General Cialdini having withdrawn the main body of his division across the river on account of a sudden rise of the stream. In the course of the day von Mengen received orders to hold San Martino, as Garibaldi was reported to have penetrated as far as Varese. At the same time Urban was despatched with his division to Como to meet and disperse the insurgent leader.

24th May.—One division of the VII corps was moved closer to the Sesia to divert the enemy who lay quiet in camp.

The Austrian official account reproduces a very voluminous correspondence between the Commander-in-Chief and the commander of the VII corps. The former is dissatisfied with the defective out-post service of the latter, while the corps commander represents the impossibility of hermetically sealing a line of 40 miles from the mouth of the Sesia through Borgo Vercelli to Novara and San Martino.

A report came that Garibaldi was at Arona, not Varese.

The Headquarter staff apprehended an attempt to cross the Po at Cornale and gave the necessary commands for possible movements.

Urban, reinforced with one brigade of the IX corps, started by road and rail to oppose Garibaldi.

A detachment from the IX corps was sent to hold the bridge of Borgoforte until relieved by the XI corps.

Gyulai wired to Vienna that the enemy was still "demonstrating" on the Sesia.

25th May.—In expectation of the enemy attempting to cross at Cornale in front of VIII corps, Gyulai ordered the V corps to re-cross the Ticino to Pieve d' Albignola and Zinasco Nuovo, and the II and III corps to be ready to help. At the same time he gave all necessary instructions in case of a *retreat* back over the Ticino. Reconnaissances were made towards Stradella and Garibaldi. Urban concentrated a brigade at Como to attack Garibaldi the following day at Varese.

The VII corps opened a cannonade across the Sesia into the enemy's camp.

The Allies mostly stood fast. Autemarre's division was withdrawn from Bobbio to Genestrello. A proof that in this direction their purpose was to defend, not to attack.

26th May.—Urban attacked Garibaldi at Varese and after a somewhat half-hearted fight fell back to Como. In his report he speaks unfavourably of the discipline and obedience of his troops, calls the fight a smart combat of a reconnoitring party, and states that of Garibaldi's 14,000 men 6,000 or 7,000 had been engaged. Garibaldi had only 3,000 altogether.

The V corps carried out the orders of the day before. The IX corps were warned to expect an attack from Bobbio and informed that the main body of the French army with two Piedmontese divisions lay between Alessandria and Voghera, the main body of the Piedmontese army between Alessandria and Casale.

Gyulai gives the position of the army on the 26th as follows:—

II Corps, San Giorgio and Cernago.

III Corps, Trumello, Garlasco.

V Corps, Sannazzaro, Pieve d' Abignola.

1 Brigade, Vaccarizza.

VII Corps, 2½ Brigades on the Sesia.

½ Brigade, Novara.

1 Brigade, Mortara.

VIII Corps, 1 Brigade, mouth of the Sesia.

1 Brigade, Cornale.

1 Brigade, Mede.

1 Brigade, Lomello.

1 Brigade, Vaccarizza.

IX Corps, 1 Brigade, Vaccarizza.

3 Brigades, between Stradella and Piacenza.

1 Brigade, with Urban.

Cavalry division, Vespolate and Gravellona.

Artillery reserve, Gravellona.

Urban's division, Como.

In his very lengthy report, in which again three alternative cases are assumed, but again not the one that actually occurred, Gyulai expresses himself as well satisfied with his very strong position. If the enemy advanced on Piacenza, he could issue from Vaccarizza on his flank and rear. If he crossed the Po northwards, he would find the VIII corps in a strong position, and could not deploy, while four corps could be hurled against him. Any attempt to out-manceuvre on either flank would be fraught with danger to the enemy.

At the same time Gyulai says he will direct the I corps to Casale Pusterlengo, the XI corps to Modena and Borgoforte. (It seems as if he hardly knew what to do with so many troops).

The Allies made no move. They stood as follows :—

French.—1st corps, Casteggio, Montebello.

2nd corps, Voghera.

3rd corps, Voghera, Tortona.

4th corps, Valenza.

Guard, Alessandria.

5th corps, 1 division, Genestrello.

1 division, landing at Livorno.

Piedmontese.—1 division, Casale.

1 division, Vercelli.

3 divisions, on the Sesia.

Garibaldi, Varese.

Gyulai was so ill-informed that in some cases the headquarters of the enemy's corps were but a day's march from his own.

This day Napoleon made a personal reconnaissance from Vercelli and initiated the turning movement round the Austrian right flank.

27th May.—Colonel Baron von Kuhn chief of the General Staff seems to-day to have been roused to apprehension for the right flank, at Vercelli, for he wired there for news and was not satisfied with the bald reply that Borgò Vercelli was evacuated. A report that railway trains travelling empty from Vercelli towards Casale was taken to confirm the belief that there was nothing to fear from that quarter.

On the 26th Urban had been induced by the threatening attitude of the people to withdraw from Como to the position of Camerlata, thence he retired the same evening to Monza. On the 27th Garibaldi attacked at San Fermo. The tactical victory is a matter of doubt. The

strategical victory, however, was most significant. Garibaldi was allowed to establish himself in Como, thus threatening the Austrian flank and rear in such a way that the whole I army corps was directed not upon Castal Pusterlengo but on Milan. Thus did Garibaldi with 3,000 men hold in check nearly three brigades of Urban's and the whole I army corps.

28th May.—On the 28th beyond skirmishes between the reconnoitring parties near Vercelli, no movement took place.

Spies reported that the enemy was in strength at Vercelli and that Napoleon had been there on the 26th and had ordered the restoration of the bridges over the Sesia. On the Po numbers of troops reported to be moving up-stream on the right bank. Roads south of the Po leading to Piacenza were broken up by the enemy, and Bobbio was reported evacuated. It followed from this that the enemy had no intention of attacking eastwards on this flank. Nevertheless Gyulai's reports show that he had not changed his opinion that the enemy was only "demonstrating" on the Sesia to make him separate his forces.

29th May.—Intelligence was received that numerous railway trains had been observed travelling from Casale and Turin to Vercelli; the enemy's right flank had withdrawn to Casteggio; masses of troops were visible at Valenza; troops were still moving up stream; the enemy had fallen back from Voghera to Alessandria. The chief of the staff after comparing all the reports calculated that four Piedmontese divisions must be at Vercelli.

Gyulai, however, in his reports holds to his belief that the Piedmontese headquarters were at Occimiano, the French at Alessandria. The centre and right of the enemy, he thinks, will attack him in front, while the left wing will seek to turn his right flank from Casale by Oleggio. He is of opinion that the French army is not yet prepared to attack. He notices that the enemy is attaching much importance to Vercelli.

Orders were issued this day for the positions of Candia and Frassinetto opposite the mouth of the Sesia to be put into a state of defence, and for the brigade of the V corps at Vaccarizza to rejoin its corps the next day.

The II, III, V, VII and VIII corps, with the exception of one brigade of the last named at Vaccarizza, now stood complete in the Lomellina. The IX corps and the brigade of the VIII lay on both banks of the Po between Piacenza and Vaccarizza. Urban was north of Milan. The I corps was arriving at Milan. The foremost brigade of this corps was directed on Bergamo to forestall a surprise from Garibaldi.

The troops in the Lomellina were placed as follows on the 29th:—

VII Corps.—Two and half brigades on the Sesia in out-posts on a front of nine miles.

Main body, Mortara, 18 miles from Vercelli.

Flank detachment at Novara and at the bridge of San Martino on the Sesia, over 18 miles from Vercelli.

II Corps.—San Giorgio and Cernago, 14 miles from Palestro, over 18 from Vercelli.

III Corps.—Trumello, 18 miles from Palestro, 23 miles from Vercelli.

VIII Corps.—Lomello and Mede, 18 miles from Palestro, 23 from Vercelli.

V Corps.—Sannazzaro, 27 miles from Palestro, 32 from Vercelli.

Artillery reserve, Granellona, 14 miles from Vercelli.

Cavalry division, Vespolate, 11 miles from Vercelli.

If these distances are compared, it will be seen that the VII corps could hardly re-inforce its own outposts in face of an enemy crossing the Sesia at Vercelli in one day, whilst the remainder of the corps were from two, three and even four days' march from the point of attack. The concentration would be the longer delayed, the longer the Austrians remained in the dark as to the enemy's intentions and in the supposition that it was but a ruse that was being made on the Sesia.

With only two bridges the enemy might have brought over at least one army corps a day, probably two corps. As it was, he had several bridges and so appeared in crushing superiority.

30th May.—*Palestro*.—At half past eleven o'clock the Austrian outposts at Palestro and Vinzaglio became aware that a whole division of the enemy was marching upon each of those places. The former was held by a battalion, the latter by a half company. For an hour they stoutly resisted, then fell back. Small re-inforcements arrived, only to find a third division in the field. In fact one brigade faced three divisions until late in the afternoon when the Austrians fell back to Robbio.

Gyulai was at Gerlasco when at half past three he heard by telegraph of the advance. It did not however cause him to alter his opinion as to its being a "demonstration." The cavalry division and some batteries from the reserve were ordered to re-inforce the VII corps, while all the other corps had instructions to be prepared to march, but more with regard to repel frontal attack under cover of the supposed feint than for support of the VII corps.

Towards evening, reports having come in that the enemy had left Voghera, Gyulai began to suspect something wrong at Palestro, betook himself to Mortara and united the two corps at that place. To get a closer view of the enemy's intentions Zobel (commanding VII corps) was directed to attack Palestro in the morning with one division of his own corps and one of the II. Here the official account gives us a glimpse behind the scenes. His chief of the staff evidently differed in his view of the general situation from Gyulai, and recollecting his calculation of the force at Vercelli on the 29th as four divisions—double Zobel's strength—he advises the latter to be cautious. The other division of the II corps was to stand fast at Frassinetto.

31st May.—*Palestro* being in the hands of the enemy, the Austrians could not see that the French were throwing more bridges over the Sesia there. Over these in the morning Canrobert's corps began to defile, while the 4th corps crossed at Vercelli and advanced by Cameriano. By one o'clock Zobel had 90,000 men before him in position.

He attacked, but as soon as he became aware of the crushing superiority of the enemy he extricated his troops, thus saving a general disaster. The brigade on the left wing was rolled up by Canrobert suddenly debouching, and its remnants retreated to Saint Angelo on the main body of the II Corps.

This Corps had advanced during the morning and had pushed its way between the two divisions of the VII corps standing at Robbio and Candia respectively. It now received telegraphic orders to concentrate at Robbio. The III Corps received similar directions, and with these two Corps and the VII, Gyulai decided to attack again next day. However the III Corps had been marching that day from Trumello and Garlasco to Saint Albino and Trumello, had halted at midday, had received then these fresh orders, and consequently could only that evening get as far as Castel d'Agona with one division at Mortara.

In front of the V and VIII Corps the day passed quietly. Between 7 and 8 in the evening, the 4th French Corps appeared at Lumellongo in front of Novara.

As for the tactical result of the fight at Palestro, one might have expected such a weak force as Zobel's was, attacking 90,000 men on so wide a front, to have been destroyed. That he was not, and that he suffered so little is due to the moral effect of his taking the initiative. In their passage of the river at Vercelli the Allies wholly assumed the offensive, but on the 31st May they were on the defensive. They could only have expected to be attacked by the whole Austrian army, and when they found out their mistake and Zobel drew off, it was too late to issue general directions for an attack to complete his overthrow; 90,000 men are not handled as easily as a company or battalion. Time is needed to alter general directions for so large a force.

It is true that at Austerlitz Napoleon I was completely successful in just such a rapid transition from defence to attack with large masses of troops. But his defence that day was but a snare, and all requisite arrangements had been made beforehand for a change to the offensive.

Hence we learn from Zobel's "partial failure" that in strategy it is always better to do something, even if the course adopted is not the most prudent, than to sit still and do nothing.

In the north the indefatigable Garibaldi induced Urban to attack him. While Urban bombarded Varese, Garibaldi made an attempt to surprise Laveno and then slipped away into the Alps.

In spite of reports from the VIII and IX Corps showing that the enemy was clearly withdrawing from south of the Po towards Casale, Gyulai pinned his belief in an attack in force near Frassinetto. In accordance with this idea, he resolved to attack the enemy about Palestro with the II III and VII corps on the 1st June, and after driving them back across the Sesia to return with these Corps to the line of the Po. The remaining Corps were instructed accordingly.

1st June.—The Retreat.—The attack never took place, and counter orders were given. These reached the III corps at 6 A.M., while the II corps did not get them until 10 A.M.

The reason of these counter orders is not known, but we may well suppose that on receiving the news of Zobel's defeat in the course of the night of the 31st and probably having heard from Novara that the enemy there was French, not Piedmontese, Gyulai had at last become aware that he had the allied main forces to deal with and not a mere ruse. We have already seen that his chief of the staff had not shared his views of the strength of the enemy's forces that had crossed the Sesia. To fight a pitched battle against the enemy's main forces with the only the 2½ army corps (II, III, and 1st division of the VII) at hand would have been the height of imprudence and a breach of the elementary rules of strategy. For a main principle of strategy is to be as strong as possible for the main battle. Opposite these 2½ corps were four Piedmontese divisions with a French corps on either flank, while the 2nd French corps had crossed the river on the 31st and was at Borgo Vercelli. The guard was at Vercelli, the 1st corps and Piedmontese reserves at Casale, 1 division of the 5th corps between Tortona and Alessandria, half a Piedmontese division and some Piedmontese cavalry.

Gyulai must have been utterly disconcerted at his discovery that the whole army which he had hitherto believed to be south of the Po, was standing over and in rear of the flank from which he had apprehended no danger. With the whole of his former assumptions and calculation upset, it is no wonder he hesitated to attack, issued counter orders, and delayed some hours before new orders were delivered.

During the morning news came of the loss of Novara. Mengen had been driven out by superior numbers—and Frenchmen moreover—back to the bridge-head of San Martino.

At last at 10 o'clock orders were issued. One division of the VII corps was to stand fast at Candia, the other to return to Castel d' Agogna. The II corps was to march to Mortara in reserve. One division of the III corps was to move from Castel d' Agogna to Robbio replacing the division of the VII corps. The other division was to move from Mortara northwards, the cavalry division to concentrate at Borgo Lavezzaro.

The execution of these orders would have caused much crossing and confusion among the columns, but two hours later they were cancelled. Reports of an advance on Vespolate induced Gyulai to push the whole III corps northwards. The relief of the division of the VII corps was cancelled. The cavalry division was to advance on the right flank of the division despatched to Vespolate.

An official report was circulated that 50,000 of the enemy were between Vercelli and Mortara threatening Magenta. The defence of this point was entrusted to the I corps. The corps however in accordance with its original instructions had sent its available troops to hold the Ticino from Sesto Calende down, and had endeavoured to join hands with Urban without in the least knowing where he was. Gyulai's last orders were received that evening and reply was made that next morning 6 battalions and 12 guns would be collected at Magenta and the bridge-head and San Martino reinforced. The IX corps was bidden to re-inforce the bridge-head at Vaccarizza.

Between 4 and 5 P.M., the dispositions were again changed.

One brigade of the III corps was to hold the passage of the Ticino at Vigevano. By evening that corps and the cavalry division were holding the line Vespolate—Vigevano.

The II corps was next morning to move to Robbio and Rosasco, relieving the division of the VII, which was to take up its position at Castel d' Agogna, the other division remaining at Candia.

These orders were cancelled at half past one at night. The V and VIII corps were now ordered to concentrate, to leave only weak detachments on the Po, and to prepare to retire across the Ticino by Pavia. In these orders Gyulai for the first time expresses the possibility of the enemy having concentrated near Vercelli so as to manœuvre him out of his position. Still he has not yet quite given up his hope of an attack south of the Po.

During the day Urban had marched into Varese. By nightfall the I army corps accomplished the re-inforcement of the bridge-head. Otherwise the day passed without any particular occurrence.

Gyulai in his report that evening to the Emperor stated that Novara was in the hands of the enemy, that he was now in far greater force at that point than he had been reported. He added that in front of the outposts it was on the whole quiet. This latter expression proves that he had really had scarcely any intelligence of the flank march that was being made under his very nose. All that his patrols reported was that troops were in constant movement from Casale to Vercelli. It may also be noted how Gyulai in spite of the "general quiet" of which he spoke, altered his plans four times within the day.

2nd June.—Counter-orders again. At half-past one at night the relief of the VII by the II corps was cancelled. Between 7 and 9 A.M., these two corps were ordered to fall back to Olevano (II) and Mortara (VII). The two brigades of the V and VIII corps at San Gorgia and Cernago were directed on Mortara. the remainder of these two corps to be ready to retreat. Clam, commanding the I corps was informed that the army was about to retreat behind the Ticino, that he was to hold fast to the bridge at San Martino, to assume command over Urban and to stop him marching to Como.

By 10-30 A.M., the III corps was disposed about Vespolate so as to cover the retreat from a flank attack from Novara, which a report that columns were making their way to that place, made possible.

At 11-30 A.M., the II and VII corps were ordered to stand fast and not retire, the latter to reoccupy Robbio. Clam in Milan was informed that the orders for the retirement were cancelled.

At 12 noon the plan of an immediate retreat over the Ticino was re-adopted. The II Army Corps was to march at once by Vigevano across the Ticino and on the 3rd June to move on to Magenta. The VII corps was to march to Vigevano and encamp between the town and the bridge. The III corps was to cover the retirement and next morning march to Abbiategrasso, so as to take up a position south of that place near Ozero fronting the Ticino. The cavalry division was to accompany the III corps, and on the 4th to march to Magenta.

The I corps was to hold on to the Ticino crossing places, main body at Magenta. If the San Martino bridge-head could not be held, the guns were to be spiked, the bridge destroyed, &c. The V corps was directed to Garlasco, the VIII to Trumello. Out-posts on the Agogna. On the 3rd both these corps were to withdraw by Bereguardo behind the Ticino and to take up their position, the V corps at Rosate, the VIII on its left at Binasco.

The IX corps was posted between Corte Olona and Casal Pusterlengo, detachments between Stradella and Piacenza.

A telegraphic despatch to Vienna gives the reasons for the plan adopted. Superior forces had turned the right flank; the left flank and lower Po were threatened; it thus became Gyulai's duty to "preserve the strength of the army for further operations." The first draft of the telegram ran "in order to reach the central position of the Mincio with forces as far as possible unimpaired,"—showing the General's view of the situation and proposed method of meeting the danger. This sentence was, however, re-drafted.

At 4 p. m. the Emperor's reply came, "At all risks hold the line of the Ticino by an energetic offensive." At 9 p. m. Gyulai reported that it was no longer possible to carry out this command; he would need two days to be able to advance again; and then it would be too late.

Meanwhile at 6-15 p. m. a telegram from Vienna announced that Count Hess was bringing the Emperor's commands and would be at Milan at mid-night.

Corps movements on the 2nd June.—The II Army Corps had been in retreat since half-past eight in the morning and was near Mortara when the third counter-order reached it, cancelling the retirement. It now halted in column of route till the afternoon, when it received the last orders, viz. to retreat, crossed the Ticino near Vigevano and bivouacked between Soria and the river. The rear of the column came in about 3 a. m.

The VII corps had been on its way to Robbio in accordance with the counter-order issued at 11-30 a. m. but found it occupied by the enemy. It left a battalion at Candia, then on receipt of the last order it proceeded to retire. On its way the corps met the columns of the II corps and had to wait for them to defile and finally arrived at Vigevano about mid-night. It obtained no provisions this day, as is usual in the case of varying and various orders.

The III Corps stood fast, and was scarcely molested at all. By evening it had one brigade at Vespolate, one at Tornaio, one at Lavezzaro, and one at Vigevano. The cavalry division filled the intervals.

The V Corps encamped for the night at Garlasco and Borgo San Siro. Some of this corps did not get in till 3 a. m.

The VIII Corps started at 4-30 p. m., and camped for the night near Trumello.

The battalions at San Martino received no provisions either on the 1st or on the 2nd June. Clam found the works at the bridge-head so ill laid out, the garrison so weak in numbers and so faint with hunger, that he despaired of any proper resistance. On hearing moreover that

the enemy had crossed the river up-stream at Turbigo and made a bridge, he abandoned the bridge-head at San Martino, spiked the guns, and blew up the bridge. The latter, however, remained passable for infantry. A few battalions were pushed forward towards Turbigo and reached Inveruno.

Thus on the night of the 2nd-3rd June the forces stood as follows :—

III Corps and Cavalry Division, Vespolate.—Vigevano.

II Corps, Soria, left bank.

VII Corps, Vigevano, right bank.

V Corps, Garlasco.

VIII Corps, Trumello.

IX Corps, marching to its positions between Corte Olona and Casal Pusterlengo.

I corp, not yet complete, Magenta.

Troops were marching well into the night, and in cases all night long. Those that had furthest to march, got no supplies.

Urban, at Varese and Somma, had not had all the orders and counter-orders issued, and was forced to do nothing. He had sent a scouting party to Sesto Calende.

As to the enemy, a considerable force had crossed the Ticino at Turbigo. It was ascertained that the main body was advancing on San Martino and one division had arrived at Treccate.

Remarks on the 2nd and 3rd June. 1.—The extreme importance in strategy of looking to the provisioning of troops. A large portion of the army suffered hunger these two days. One of the chief reasons for abandoning the important point of San Martino was the starving condition of the garrison. With the best precautions privation may at times have to be undergone, but here there was no reason for it. Most of the troops at the bridge-head had just arrived by rail from home. A three days' iron ration would have sufficed them for the first few days. With this they had not been supplied. It appears astonishing that in the rich neighbourhood of Magenta the garrison found nothing by requisition. One can only suppose that they did not understand the system. It is said that a store-keeper at Milan refused to issue them rations, because his stores were not intended for the I. corps. Such conduct can not be sufficiently condemned.

2.—Fatal results of a heap of contradictory orders. "Ordre, contre-ordre, désordre." The inevitable effect of counter-orders issued by the General staff during a day's movements is to overstrain the men. Confusion and delay follow, and control falls from the chief's hands. Many, when orders suddenly change, have not time to correct their bearings, and wander about aimlessly. If during a march a counter-order is issued, the commissariat trains by reason of their distance in rear cannot be brought up in time. If fresh counter-orders arrive, and the trains are dragged this way and that, roads are missed, and a confusion impossible to unravel in the consequence.

Counter-orders cannot always be avoided. For example in 1870 when the direction of march of the German armies westwards had to be

changed to northwards on receipt of the intelligence of M'Mahon's flank march. This occurred about mid-day. The troops were all on the road. All the usual confusion, delay, and overstrain followed. Provision waggons did not turn up. An iron ration of bread, rice and coffee saved the men from hunger. In this example counter-orders were necessary. Had they been delayed even till evening, Sedan might never have been a glorious victory for Germany.

Without absolute necessity counter-orders are to be avoided. On the 2nd June 1859 nothing that was ascertained about the enemy, could excuse them. They seem to have originated merely in a change in the Commander-in-Chief's view of the situation, every time that a new change of view got the better of the former one.

3.—Dispositions for troops must not be drawn out too long beforehand. To do so causes misunderstanding. Naturally orders must be issued in sufficient time to allow corps, divisions &c., time to carry them out in a regular and orderly manner. But to give orders for what is to occur days afterwards simply means misleading subordinate commanders. Thus on the 2nd June, the V and VIII corps having several days beforehand been warned to prepare for retreat by Pavia, were directed eventually across the Ticino by Bereguardo. Such a sudden dislocation of communications in rear, especially during a retreat, will always give rise to great confusion amongst all the life and bustle in rear of an army, which in the shape of stores, ammunition and provisions form the vital nerve of the force.

4.—The II and VII Corps both marched from the Sesia to the Ticino during the 3rd June. The former reached the left bank. The latter left Candia some hours after midday and at night encamped on the right bank near Vigevano. At the opening of the campaign the army took three whole days (30th April, 1st and 2nd May) to do the same distance, in spite of having no enemy to check its march.

5.—Gyulai's conduct on the 1st and 2nd June gives the impression that his strength of judgment was really affected. This was very human and, although a good soldier should never lose his presence of mind, it was under the circumstances almost pardonable.—Suddenly on the morning of the 1st June he became aware that he had totally failed to grasp the actual situation of affairs. He saw the ground cut away below his feet, the fate of the army and his own honour compromised. The whole weight of the strategist's responsibility made itself suddenly and terribly felt. To face such a blow requires extraordinary strength of character. Such a character Gyulai did not possess. A letter written by Count Hess to Vienna on the 3rd June gives us a hint as to Gyulai's state of mind. He says he has been striving to "rouse" Gyulai.

3rd June.—Hess joined Gyulai at 5 a.m., on the 3rd at Bereguardo. In accordance with Hess' instructions an order was despatched to the III, V and VIII Corps to stand fast for the present. Apparently Hess intended making an energetic attack on Novara from the south. Meantime news came in of the enemy's passage of the Ticino at Turbigo, of the partial destruction of the San Martino bridge, and that Clam was marching north—(from which last it was erroneously supposed that he

was marching his whole Corps, whereas he had only sent a few battalions.) Clam also asked for support direct and indirect, hoping for an attack by the III Corps on the line San Martino—Novara in order to divert the attention of the enemy from himself.—However the fact of the enemy having the bridges of Turbigo and San Martino at his disposal seems to have decided Hess that the retreat had already gone too far to make any offensive attempt on the right bank of the Ticino possible—consequently Clam was warned against advancing too far north. The III, V, and VIII Corps received orders at about 10-15 A. M., to continue their retreat. The II Corps was ordered to Magenta. These movements were carried out without mishap.

In the course of the day a fight took place at Robechetto between the French Division that had crossed at Turbigo supported by a second division, and Clam's reconnoitring detachment. Of the $4\frac{1}{2}$ battalions, only $1\frac{1}{2}$ were engaged. Overwhelmed by numbers these gave way and the force withdrew to Marsallo, $2\frac{1}{4}$ miles north of Magenta. The men, it is said, were so exhausted with hardships and want of food, that numbers fell fainting and a few committed suicide!

Urban on hearing that the French had crossed the Ticino marched with two brigades to Gallarate, leaving one at Varese.

Corps movements on 3rd June.—At the close of the day the I Corps and Mengen's demi-brigade stood north of Magenta from Marsallo to Bernate and west of Magenta on the Naviglio Grande from Bernate to the Bridge of Magenta.

The II Corps had had no provisions on the 2nd, cooked on the morning of the 3rd, and left Soria about 8 a. m. The cavalry division cut through the Corps and camped at Corbetta—The II Corps then followed the cavalry and took post on the left of the I Corps.

The VII Corps did not find the roads clear until 11 A.M. One division marched by Abbiategrasso to Corte Cerella, $2\frac{1}{4}$ miles S. E. of Magenta. The other division had had no food the day before, halted to eat and marched on in the evening to Castelletto, $6\frac{3}{4}$ miles S. of Magenta.

The III Corps found the bridges near Vigevano blocked, halted to cook, and then marched, one division to Abbiategrasso, the other to Ozero.

The V Corps reached Fallavecchia between 9 and 12 at night. One Brigade was detached to near Pavia and was marching until 6 A. M.

The VIII Corps left Trumello at 2 P. M., and took up its position about Bereguardo, its rear-most troops crossing the bridge at 3-30 A. M. on the 4th.

The IX Corps concentrated near Piacenza, one brigade at Stradella. Clam's strength at Magenta was $38\frac{1}{2}$ Battalions, 26 squadrons, and 136 guns.

1 Division of the VII Corps was $6\frac{3}{4}$ miles distant.

The III Corps was from 7 to 10 miles distant.

The V Corps from 10 to 14 miles distant.

The VIII and IX Corps, most of the Artillery Reserve, and Urban's troops were too far off to support him at Magenta on the 4th.

It might be supposed that even though the enemy had possession of two passages of the Ticino, Turbigo and San Martino, the Austrians were equally possessed of two crossing places at Vigevano and Garlasco, and might cry quits. But one of the chief points of difference between marches to the rear and marches to the front is that in the latter the fighting troops can be more quickly led over defiles than in the former, because in marching to the front it is the fighting men, in marching to the rear it is the trains of waggons have to be allowed to pass over first.

In the evening orders were issued from Army Headquarters :—

The Artillery Reserve to march at once to Rosate, $11\frac{1}{2}$ miles from Magenta.

The IX Corps to concentrate one Brigade at Piacenza, one on the 5th June at Pavia and to watch the Ticino as far as Bereguardo, to keep the bridgehead at Vaccarizza lightly garrisoned, to break up and carry off the bridge to Piacenza and prepare to build another near that place.

The I, II, III, V and Lilia's division of the VII Corps were to be ready to march by 8 A. M., on the 4th.

The VIII Corps was also to be ready to start at 8 A. M., and to leave one Brigade at Bereguardo and withdraw the one near Pavia on the 5th when it had been relieved by the IX Corps. The VIII corps was to establish the column magazine at Pavia, and the main reserve of ammunition at Pavia and Binasco.

Judging by these army trains being collected about Pavia, Gyulai no longer felt any apprehension for that flank and yet it is inexplicable why he did not direct III, V and Lilia's division of the VII Corps to march straight to Magenta, while he was about it, instead of merely warning them to be in readiness to march. Moreover the battle might have lasted two days, and had he wired to Urban and to the VIII Corps, they also might have started on the 4th for the scene of the impending crisis; even the IX Corps might as well have marched northwards at once. There seems to be no earthly reason for the VIII corps to leave one Brigade at Bereguardo, another at Pavia, the IX corps one at Stradella, another at Piacenza and a third at Pavia—thus depriving the main army of 5 Brigades, the strength of a whole corps, in order to watch a neighbourhood where there was no enemy,—a task that might have been relegated to a few cavalry.

4th June. Magenta.—The night passed quietly. At 7 A. M., the outposts reported the enemy massing near San Martino. Gyulai received this report at 8 A. M., Clam concentrated his troops, sent the exhausted and starving back to Magenta, and sent some cavalry to reconnoitre towards Turbigo.

At 9-15, A. M., it was reported from Bernate that the enemy was advancing in strength from Turbigo. The II Corps thereupon pushed a Brigade on to Buffalora.

At 9-45 A. M., Clam having reported to Gyulai in a despatch that reached the latter at 10-30 A. M., that the forces advancing from Turbigo were not strong, Reischach's Division of the VII Corps was ordered

up to Magenta, and Clam was directed to attack the Turbigo troops with this division and one of his own. Meantime however the enemy had crossed the bridge at San Martino and was about to attack the Austrian line on the Naviglio Grande. It was therefore no longer possible to advance these two divisions towards Turbigo.

Gyulai wrote to Urban to attack Turbigo at once. The letter was received *on the 19th June!* (Importance in strategy and tactics of a good system of delivering orders.)

At 11-45 A. M., Clam reported the state of things to the Commander-in-Chief and at the same time wrote to the III and VII Corps to hasten to his support.

At 12-45 P. M., Gyulai sent orders to the VII Corps to march Lilia's division to Corbetta, Reischach's to Magenta; the III Corps to threaten the enemy's right flank from Robecco, supported by the V Corps which was to post itself near Abbiategrasso; the VIII Corps to advance by Gaggiano; the Artillery Reserve to be brought up at once.

These very proper directions were unhappily 12 hours late. Their issue proves that Gyulai counted on a continuance of the battle on the 5th June, for the VIII Corps and most of the V were too far off to take any part in the fight of the 4th. The V Corps was 13 miles away, the VIII still further off. It took an hour at least for the orders to reach. The V Corps started between 3 and 4 P. M., but only one Brigade took part in the battle that evening.

As regards the general course of the battle—the I and II Corps fronting west in a line from the Ponte Vecchio by the Ponte Nuovo to Buffalora made a most stubborn resistance against superior forces and held even M'Mahon's masses off for a long time, as they advanced from Turbigo. When the Canal seemed almost lost, an attack by Reischach's division of the VII Corps, led with incomparable valour restored the fight. The appearance of the III Corps from the south on both banks of the Canal threatening the enemy's right flank succeeded in checking for a while the attacks from west and north as well. At last towards evening M'Mahon succeeded in bringing up 3 French and 2 Piedmontese divisions from Turbigo against the line Buffalora—Magenta and pressed forward in immensely superior force on the Austrian right flank. Tired to death the Austrians were first driven out of Buffalora. At last Magenta itself attacked from north and west simultaneously was lost at about 8 P. M., in spite of a heroic resistance by troops who had been brought up in some confusion and were therefore not easily led. Falling back in retreat to the southward, the beaten troops were covered by the leading Brigades of the V Corps.

By night time the I and II corps and Reischach's division were in full retreat on Cislano, and the III Corps retired to Carpenzago. Two and a half Corps of fresh troops *viz.*, the V, VIII and one division of the VII Corps stood on the line Carbetta—Castellazzo—Carpenzago hardly a mile from the line Magenta—Ponte di Curone, ready to renew the battle on the 5th June. Orders for this purpose were issued but cancelled on Clam's report that the I and II Corps and Reischach's division were unfit to fight again.

The enemy did not pursue. He too was so shattered that he stood fast for 24 hours "*pour réorganiser l'armée.*"

Of the Austrian forces 75,000 infantry and nearly 3,000 cavalry had been engaged. Deducting from these numbers the IX corps and the brigade of the VIII corps detached towards Pavia and Piacenza it is evident that Gyulai could have renewed the battle on the 5th with 50,000 troops, not counting the III corps, the brigade of the V that had been engaged on Clam's troops,—and had Urban been telegraphed for on the 4th, he might have had 60,000 men at his disposal.

It is impossible now to say whether Clam was just in his report and whether Gyulai might have done better to fight again on the 5th. Any way the Allies were as much shattered as the Austrians.

General remarks on the mistakes and strategy of the Austrian General.—Had Gyulai desired to play into his enemy's hands, he could hardly have done better than fritter away the precious weeks from the 27th April to the 1st June as he did, in busy inactivity, in wearying aimless marches. It will be interesting to endeavour to ascertain what manner of man he was, in what qualities he was deficient, and what other influence worked upon his plans, before venturing to pronounce him incapable of a high command in the field.

Character of Gyulai.—He was a highborn gentleman, aristocrat to his finger-tips in sentiment and in behaviour, a strict unbending disciplinarian, stern and just, more respected than loved. Before the war even it was said that he was obstinate, that he understood the details of garrison service and of the regulations better than the tactical use of ground or indeed strategy. But it was never said that he was wanting in ability nor even that he suffered from the weakness of senility. The general feeling both in Vienna and in the army was that if he was given an efficient Chief of the Staff, he was the very man to carry on the war with energy.

It is hardly necessary here to dilate on the importance of harmony in the Head-quarters Staff. The famous Blücher had no head for science and strategy, as is well known. Personal courage that could animate the most faint-hearted of his entourage, a spirit of initiative that would not be denied, and a fair share of obstinacy were the chief traits of Blücher's character. The thinking out of the attacks on which he was ever insisting, was the business of his friend Gueisenan, the details of their execution that of Müffling.

Gyulai's Chief of the Staff.—Now Gyulai's Chief of the Staff was Colonel von Kuhn, undoubtedly the man of the whole army among men of his standing, who enjoyed the highest reputation as a smart, capable, energetic officer. Nevertheless it is pretty evident that the necessary harmony and confidence did not exist between Gyulai and von Kuhn. At all events it is plain from the repeated counter-orders that wearied the army and yet gave it no chance of putting out its strength that there were two voices, like opposing currents at headquarters, the one urging attack, the other inclined to defence. We know that Gyulai from the commencement considered the army too weak to carry out an offensive rôle with success, that he so expressed his opinion to

the Emperor, that he was consistently disposed to act on the defensive and was always glad to gravitate back to the position in the Quadrilateral, which he believed to be the most advantageous for maintaining himself in Italy. Hence we can but infer that Kuhn was the motor of the other current, and the inference corresponds with the character, of a younger, more active and energetic man.

In the matter of the standing bridge at Valenza on the 2nd May, the bridge might have easily been surprised. The III army corps reported so, but was not reproved for having omitted to surprise the bridge. It probably received orders from the cautious Gyulai himself not to seize the bridge. Afterwards at headquarters the Chief of the Staff carried a proposal to seize the bridge and to lay another at Bassignana probably the army corps received from both officers different explanations as to the object in capturing the bridge. The corps commander enquired whether he was to utilize or blow the bridge up. In reply to the enquiry Gyulai who felt he had gone far enough in sanctioning the seizure of the bridge and had no intention of crossing the Po, ordered it to be destroyed.

The Chief of the Staff now urges that it is high time to look up the Piedmontese army at San Salvatore and to defeat it before it can be reinforced. His plan is carried so far that on the 4th May the VIII corps cross the Po at Cornale under the excuse of thus better covering the left flank of the army in case of its advancing upon Turin. We infer this move to have been an excuse, and that Kuhn cherished the silent hope that the corps would get engaged, would need support from the two other corps, and that thus a decisive action would be brought about. Otherwise there is no sense in the General tying the hands of three-fifths of his army by sending them so far south in order to cover the march along the northern road *via* Novara and Vercelli. The flood of the 5th May opens their eyes to the danger into which the VIII corps has been thrust. In all haste Gyulai withdraws it on the 6th, and as the Chief of the Staff insists on an attack in any case, it is agreed to march westwards upon Turin.

The tardiness of the advance across the Sesia on the 7th and 8th May gives it quite the stamp of a compromise. His foremost troops have reached the Dora Baltea, when Gyulai suddenly awakes to anxiety for the safety of his retreat to the Quadrilateral. His anxiety is the more poignant as he has not encountered the enemy in his march. While he is marching on Turin, perhaps the enemy is advancing south of the Po and cutting him off. Moreover he knows the principle that it is only after the enemy's main army has been crushed, that peace can be dictated in safe possession of his capital. On the 9th May a counter order is published. Perhaps Kuhn was absent at the time. On his return the orders are cancelled again, until at last Gyulai has his way. In this way the various orders and counter orders of that day are comprehensible.

From the 10th May Gyulai betakes himself to a central position in the Lomellina. The IX corps covers his left flank at Piacenza, where the enemy would be unable to force the narrow defile of Stradella even

in spite of superior numbers, before Gyulai issuing out of Vaccarizza with his main forces fell upon him in flank and rear. An advance by the enemy across the line of the rivers Sesia and Po he believes himself able to repel fairly easily with united forces, while the enemy by moving round to the north exposes himself to the danger of being attacked in flank and driven into the Alps.

Generally speaking, the idea of taking up a central position in order to defend a river line, is not one to reject, if one has planned and is in a position to attack and destroy the portions of the enemy's army that have crossed the stream, with united forces. Clausewitz calls this the indirect defence of a stream. He demands however at the same time a constant direct defence, so as to be in a position to discriminate at once between serious attempts at a passage and mere demonstrations. Besides which the central position must lie sufficiently close to all possible points of passage to enable them to be reached before the enemy brings over the whole of his force; that is to say, within 24 hours' distance.

However for the sake of the reconnaissance in force, which led on the 20th May to the battle of Montebello, the direct defence of the river line was given up near Vercelli, in order that the army might not be scattered over too extended an area. What position may these two personalities, of whom we have been speaking, have taken up with regard to the reconnaissance in force. The employment of forces insufficient for a decisive action leads one again to suppose, that the attempt was once more the result of compromise. Gyulai believed the reconnaissance to be necessary, because he felt so sure of danger looming from this direction. Kuhn gave his consent in order that at all events something might be done and time not wasted.

The consequence was that Gyulai was only confirmed in his incorrect view, went back to his central position and drawing his forces closer to his left flank ceased to pay attention to the neighbourhood of Vercelli. Meanwhile the enemy possessed himself of the point of passage left open to him at Vercelli and in Garibaldi's successful advance recognized that here he could carry out an offensive movement at less cost than south of the Po or by crossing the river line in front of the Austrian army. We know that to the very last Gyulai adhered to his opinion that the enemy was only making a demonstration on his right flank. Colonel von Kuhn, it expressly said, on the other hand, had a very different opinion and warned Zobel on the 31st May to be cautious in his attack, as the enemy might possibly be too strong for him.

It may seem incomprehensible that Gyulai should still have shut his eyes to Kuhn's views, even after their correctness had been proved. But as to this, nothing is more difficult than to find out the truth from the contradictory reports received from both spies and reconnoiters. Not all men have the luck or the dexterity to break through the veil of fog that dims the sight. Even the greatest and most experienced commanders have allowed themselves to be thus deceived. It is said that Frederick the Great owed his reverse at Hochkirk to the obstinacy with which in spite of warnings he put his faith in a traitorous spy, and

angrily rejected all intelligence that disagreed with this man's reports. And Napoleon I. himself for many days believed that he was drawing the enemy's army after him while he was really only being misled by a screen of cavalry, whereby he lost his capital and his crown.

A general must adhere to views once adopted with a certain amount of obstinacy, if he does not want every contradictory report to upset his plans. Intelligence brought by spies is in a war of manœuvre generally of little worth. It is often several days old and has usually been paid for by both parties. The only trustworthy reports are those of one's own patrols, but it was not until 1870 that cavalry were properly used (in Europe) in reconnaissance. At the same time Gyulai was not well served as a rule by the few squadrons which he had in front line, and it is not to be denied that his command as to infantry accompanying cavalry patrols seriously crippled the reconnoitring service. The impulse that prompted this order sounds now almost absurd. Gyulai could not bear to think of an imperial Hussar being basely done to death by peasants armed with mere pitch-forks. It was a stain on his honor and a shame to his cloth. The feeling is akin to the old fashioned disgrace attaching to being taken prisoner or of losing a gun.

Gyulai after the second fight at Palestro became fully aware that he had the enemy's main forces in front of him at Vercelli. The waverings between retreat and resistance on the 1st June point again to disagreements at head-quarters. They ended in the army finding itself "as it was." On the 2nd June the fact that the enemy did not attack, forced both Gyulai and Kuhn to infer that he was pressing on Milan by Magenta. Kuhn at once urges the attack of the enemy on his flank march. Gyulai, fearing for the safety of his further line of retirement behind the Mincio prefers to retreat across the Ticino and oppose the path of the Allies at Magenta. Hence again counter-orders and forced marches, which ended in Gyulai at last having his own way. Even then he seems to have not been quite in earnest, else he would not have detached so many troops to cover unthreatened districts, while Hess and Kuhn urged decisive action.

The working of this head-quarter staff, Kuhn's dissimulations, Gyulai's passing compliance, counter-orders issued in one another's absence, the lively disputes that took place are only all imaginary guess-work, but they are probably what actually took place. All this teaches us that there must be harmony at head-quarters, the chief and his staff must be picked, so as to fit one another. (A lesson that those who declaim so loudly against the so called "rings" familiar to the British army, would do well to lay to heart.)

Kuhn the Emperor's mouth-piece.—It might appear that Kuhn as the junior in rank should have yielded to and entered into Gyulai's ideas. Under ordinary circumstances this would have been true, but in all probability Kuhn represented the views of His Majesty the Emperor of Austria himself. At all events his views and the Emperor's were identical. For instance—the ultimatum dated the 19th April was presented at Turin on the 23rd and gave the Sardinian government a respite for three days. Gyulai must have been fully aware of this respite and.

might well have utilized the three days in preparing to assume the offensive immediately hostilities broke out, whereas we find that during the respite on the 25th April he sent a memorandum to Vienna, evidently in reply to views communicated to him, in which he urged that he was not strong enough to attack with any prospect of success.

To prove that the Emperor's idea of assuming energetic offensive was the plan with most chance of succeeding, let us imagine that the strategical advance of the army—that is to say the advance on a broad front (so as to utilize all roads, but sufficiently limited to allow of rapid concentration) up to the position from which the army breaks forth to seek and strike the enemy—was accomplished by the 26th April, the date of the expiry of the respite allowed by the ultimatum, on a front of 27 miles from Turbigo to Pavia, and one army corps ready at each of the following places.—Turbigo, Buffalora, Vigevano, Bereguardo, and Pavia. Orders to cross the frontier arrive late on the 27th. On the 28th the army moves on the line Vercelli—Pieve del Cairo. We saw that on the 2nd June the Austrian troops covered the distance between the Sesia and the Ticino in one day. Under far more favourable conditions therefore and without an enemy near we may well suppose the same march accomplished by the 29th April.

We also saw that on the 2nd May it was reported by the III army corps that it could easily surprise the permanent bridge at Valenza. Four days earlier this would have been still easier effected. By midday on the 29th April therefore we may imagine the bridge in Austrian hands.

Patrols would now have reported the enemy concentrated in position at San Salvatore. They would now have to choose between moving on Turin and crossing the Po southwards to fight at San Salvatore. The former plan would have left the enemy's main army on their left flank and rear and the least pressure from that direction would have perceptibly endangered the movement. Accordingly the alternative plan would have been adopted. On the 30th April they could have begun the passage of the Po by the bridge at Valenza and a second pontoon bridge laid close by, crossing over at the rate of one army corps a day by each bridge, four corps could have advanced on San Salvatore by the 2nd May, leaving one in reserve. Towards Turin the movement would have been covered by cavalry.

On the 2nd May the Sardinian army could only have numbered 40,000 men. Its paper strength was 80,000, but we have seen that as late as the 20th May it totalled only 50,000.

Of the French army the 1st corps, followed by the 2nd and the Guard, was entangled in the Apennines between Genoa and Serravalle, at which place the head of the column was just emerging. The 3rd corps had one division at Alessandria, the rest were still defiling over the Mont Cenis road, leading brigade at Susa. It is uncertain where the 4th corps was on this date. It actually entered Alessandria on the 7th May, and so, on the 2nd, may have been behind the 3rd corps or possibly united at Turin. Even in the latter case, only the one division of the 3rd corps and a few battalions despatched by rail from Serravalle, Susa and Turin could have been available on the 2nd May at San

Salvatore. The railway was little fit for use. The whole French reinforcements could hardly have amounted to more than two divisions in strength.

The Austrians could have marched to attack with 100,000 men at least.

We need not follow further the imaginary course of the campaign. Gyulai undoubtedly had his country's interests at heart, but that is not enough. He should have subordinated his views, beyond acts of mere obedience, to those of his Sovereign. The Emperor demanded a swift energetic attack. To such action Gyulai could not make up his mind. The Sovereign has far more opportunities and means of collecting political and military intelligence than the General on the frontier, and must therefore be better informed. He cannot conduct his policy with success, if the General's strategy does not harmonize with it. Blume says:—Success in war depends substantially on whether those who have been appointed to represent the political and military points of view of the situation, act reciprocally with mutual understanding.

Undoubtedly the obedience of a General must be quite another thing to that of a subaltern, whose obedience is chiefly mechanical. The General of an army in the field must strive to carry out the intentions of his Sovereign but be at the same time independent in thought and action. If he cannot do this, he had better resign his command, even if the moment is critical and fraught with danger to his country. He must tell himself that by only half entering into the ideas of his Sovereign or Government he prejudices the success of the policy adopted, and holding the common weal in view he must silence the prompting of personal pride and ambition. His honour and fame gain nothing by doing with reluctance what has been imposed upon him. For that only leads to such half measures as we see in this campaign. Here we constantly see that anxiety for his retreat into the Quadrilateral paralysed Gyulai's energy. Half or more of his army was almost always engaged in covering his flank and rear. Consequently the half hearted attempts to cross the Po up to the 6th May were reduced to mere demonstrations; less than three of the five corps were employed in the advance to the Dora Baltea up to the 9th May; at Montebello the very small portion of the army engaged was not supported by the forces in the vicinity; to oppose the main advance of the enemy at Vercelli and Palestro he set not more than $2\frac{1}{2}$ corps in array; finally, at Magenta not even half of his total force was engaged in the battle.

Danger of a plan of operations —It is a dangerous thing to keep in view a fixed plan of operations before the opening of a campaign, however, excellent a plan it may be or has been. Circumstances may at any moment alter the whole face of affairs. In strategy what is excellent to-day may to-morrow be entirely wrong. Napoleon I. once said: "*Je n'ai jamais eu un plan d'opération.*" The principal thing is that the "strategical advance" of the army may be successfully and correctly effected. After that one must look to circumstances, that is to say, to the condition, and strength of the enemy's main army, to know

what to do, in order to gain the mastery at the critical moment and secure for oneself the advantages of taking the lead. Hence dispositions, resolutions, speculations, that precede the strategical advance generally prove idle pictures of fancy. They may also do harm, by biasing clear judgment and paralysing initiative. Throughout this campaign they led Gyulai to employ altogether too many of his forces in covering communications, so that they were not present when wanted on the field of battle.

"Covering" and "Communications."—The terms "covering" and "communications" are often tactically as well as strategically misapplied. There are cases when an infantry brigade is quite insufficient cover, and other cases when a cavalry patrol performs the duty better than a brigade of either arm could. The point is, against what you require the covering force. For example, to cover the point of passage of the Ticino at San Martino the whole of the force which Clam could send there proved inadequate. He consequently abandoned the bridgehead. To cover the line of the Po from Piacenza to Pavia on the 3rd June the whole of the IX corps with a brigade of the VIII corps appears far too much. A few squadrons would have sufficed.

It is the same with "communications." In one case a whole army corps may not suffice to keep up communication between the flanks of a defensive position. (Solferino.). In another, patrols would be sufficient, in a third there is no necessity for troops at all. At St. Privat and at Sedan the XII and the Guard corps were enjoined to keep up communication with one another. For the purpose each corps commander gave the other, one officer of his staff with several orderlies. This officer had nothing else to do but to keep his own General *au courant* with what the other purposed doing, directed to be done, and succeeded in doing, and with the hour and minute at which this stage or that was reached.

For both objects therefore, covering and communication, use as few troops as possible and as are absolutely needful, so as to be as strong as possible for the crisis.

With reference to any thing that may have been said above in approval of Gyulai's defensive position in the Lomellina, it was not intended to convey the idea that a rigid defensive in such a position is ever desirable. It could only be approved of for a time, as long as the plan was to sally forth to attack as soon as the expected reinforcements arrived.

Method of drafting orders.—With regard to the method in which orders were issued from army head-quarters, some further remarks may here be made. "Dispositions" were issued of a length of six closely printed quarto pages, and almost all were about this length, even when by reason of changes and alterations three or four were issued on one and the same day. Who was to read all this? And how was it possible to write, copy and check all this at army head-quarters? How much time must have passed before the orders were read and understood, and before they were again given out and executed. Now in war it is of the utmost importance in giving dispositions and orders to be just as nig-

gard of every word, as in the fight of every man you have and with detachments of the number of troops employed. For unnecessary length of orders interferes with their distinctness.

If we look at these orders, we find that they have grown to such inordinate length principally from two causes. First, through their frequent anticipation of events by several days and presupposition of different possibilities, and secondly because they deal with a number of small subordinate details, which are in some cases matters of course, and in others matters for the corps or divisions to settle—Such interference with the sphere of operation of a subordinate command has however far more hazardous effects than the production of uselessly lengthly dispositions.

To begin with, it kills the initiative of the inferior ranks. If the Headquarters Staff accustoms the army to look to it for directions on every trifling matter, then everything certainly will be neglected for which a special order has not been issued, and any opportunity that presents itself, will certainly be left to pass unprofited by. If it is not true that Gyulai that evening forbade the bridge of Valenza to be stormed, when by the report of the corps on the spot its surprise was easy of accomplishment, it is only to be ascribed to the want of initiative which was the result mainly of the accepted system of giving orders. What was the practice like in the German army in 1870? If Manteuffel from time to time gave orders which were to initiate the attack of a town or a position, Gœben merely reported that he had occupied the town, taken the position, and so on. Non-interference with the working sphere of subordinates while at the same time holding them responsible for sins of omission where opportunities might be seized by independent action, produces initiative. Intermeddling in details which are not the business of the superior, paralyses the initiative of the inferior.

Furthermore, to lay down directions for minor bodies of troops, as we often find done in the long-winded orders in question, to provide for the movements of brigades, demi-brigades, and even single battalions and squadrons has the further disadvantage that the next day these details must all be enacted afresh, because officers of intermediate rank cannot give directions to, for example, a battalion, for which the commander-in-chief has undertaken to issue orders. Thus the details multiply and the orders grow longer and longer. Once that at headquarters the practice prevails of laying down directions for individual brigades instead of whole corps only, it is never again abandoned, and before one is aware of it, the organisation of the corps is broken down and the troops are jumbled together. Here almost always instead of organised commands we find troops bound together by temporary bonds of discipline. At Montebello five brigades from four different corps are placed under Stadion's command. Zobel at Palestro has to attack with one division of his own corps and a strange one. At Magenta Clam commands troops from all the different corps!

Such a system can have only disastrous results; the regular provision of food and supplies is thereby rendered doubtful. Troops fight, tactically speaking, better in their customary organised commands than in temporary conglomerations.

The orders and dispositions of the German army in the war of 1870 on the other hand are a pattern of laconic brevity. They are all framed on a set model

- (1) All that is known regarding the enemy.
- (2) A sketch of the general idea of our own side.
- (3) Directions for the I corps.
- (4) Directions for the II corps.

and so on.

The orders were dictated to as many officers simultaneously as there were corps in the army, generally to staff officers told off to receive orders, and each corps thus learnt the directions given to each of the others as well as the idea of the commander of the army.

Then such details as covering troops, communications, outposts, reconnoitring troops pushed as far forward as possible etc., were left to be settled by the corps without special orders from superior authority, and they had to be able to judge when the opportunities that presented themselves for independent action were in coincidence with the general idea, inasmuch as they only acted upon this idea.

This did not debar the commander of the army, if he had reason to lay special value upon it, from now and again giving one or another corps a special task, for example, to push the outposts forward to a certain line, to direct the particular reconnaissance of this or that point, to cover with stronger troops than usual the one or the other flank, or to occupy a place with a certain number of men. If, however, the scanty brevity of an army order was not enough to indicate the particular position of any unit, as for example, a corps, then it was sent for this special occasion a separate order showing its bearings, special instructions, or, an officer from the general staff entrusted with the duty of imparting the general intentions of the supreme command.

Operations of the Allies up to the 4th June, 1859.—We now turn to consider the campaign from the point of view of the other side, the Franco-Sardinian.

Passing without further notice the fact that after throwing down the gauntlet of war on the 1st January, Napoleon nevertheless was unprepared for actual war until the following May, we find that subsequent to this the French Emperor's procedure left little to be desired in a strategical sense.

Strategical advance of the French.—His first object was "the strategical advance" to bring assistance with all speed to his allies. To do this he had to use every route available, and at his disposal were five army corps and the Guard. Only two routes were open, namely the road over Mont Cenis and the sea route to Genoa and thence through the Apennines. To effect the strategical advance therefore it was necessary to march columns widely separated and to unite them again before coming into action.

From the moment of the delivery of the Austrian ultimatum the French leaders and commanders worked with a will. From the 25th April 17 troop trains a day were despatched to the south.

The natural goal of the strategical advance of the French was the point of concentration of the Sardinian army, namely Alessandria.

This point was very well selected, as it coincided with the means of defence at hand.

The proximity of the fortress of Alessandria, ill provided as it may have been, nevertheless offered some prospect of gaining time in the face of a hostile advance south of the Po from the east. The river-line of the Po too must have blocked the path of an enemy pushing forward from the north out of the Lomellina. And if this enemy attempted to march on against Turin, he was threatened in flank and rear by the army from its position at San Salvatore.

On the other hand to march to this point of concentration, as it was finally decided on, had this disadvantage, that it had to be carried out from two separate directions, the one from Mont Cenis viâ Susa, the other from Genoa viâ Serravalle.

The chief object for the French leaders then was to support the Sardinian army as quickly as possible with troops and after that to postpone the crisis until sufficient forces had been concentrated in the strategical advance to assume the offensive. Until this moment arrived it was in their interests to persevere in a strictly defensive attitude and avoid any decisive action. They certainly acted up to this plan with praiseworthy consistency.

Mysterious movement of the 4th French Corps.—It is worth while noticing here that the Austrian official account of the Campaign repeatedly mentions how French sources of information make a secret of the locality of the 4th Corps from 2nd to the 7th May, and suggests that it had reached Turin before the 3rd Corps, the head of which was only at Susa on the 2nd May and which took several days to defile through the Alps. This implies violation of territory before declaration of war.

Whatever the truth as to this may have been, it is certain that the corps directed over Mont Cenis arrived in the neighbourhood of San Salvatore and Alessandria earlier than those landed at Genoa. For the 3rd and 4th Corps were in and about Alessandria by the 10th May, while the 1st and 2nd Corps and Guard were not massed on the line Novi—Cassano until between the 7th and 14th May; the Guard was still in the pass, and the 5th Corps just beginning to disembark.

Caution and energy.—The advance both from the Alps and from the sea was executed with both energy and caution. The troops were not hurried piece-meal into position, but were first united by corps at the exit to the defiles and pushed forward. Thus the 1st and 2nd corps north of Serravalle covered the Guard in their passage of the Apennines, and if the 4th Corps really crossed the Alps before the 3rd it acted in a similar manner for the latter Corps. With the 5th Corps, things were different. Autemarre's division was detached, and it is probable that the French could not wait for its concentration as the Austrians also were getting up reinforcements.

In the further advance it is noticeable with what care and precision the French commanders preserved the organisation of their several corps. In respect of facility of command this gave the Allies a distinct advantage over the prevalent practice in the Austrian army of breaking up Corps commands for every fight.

2nd May.—Position of the Allies on the 2nd May.

5 Piedmontese Divisions at San Salvatore :

3rd French Corps, 1 Division, Alessandria,
1 Brigade, Susa,
Remainder, on the march ;

4th " " (? On the march ;)

1st, 2nd and Guard Corps, just issuing from the Apennines at Serravalle.

4th May.—3rd Corps, Alessandria and Turin ;

4th Corps, (?) marching from Susa to Turin ;

1st Corps, Gavi—Novi—Tortona ;

2nd and Guard Corps, in the Apennines.

While the troops were in these positions, news that the VIII Austrian Corps had crossed the river gave rise to the greatest apprehension, lest the Austrians should cut in between the two separate parts of army.

5th May.—On the 5th May a reconnaissance by an Austrian brigade struck panic into Tortona.

7th and 8th May.—5 Piedmontese Divisions, San Salvatore ;

3rd and 4th Corps, Cassano, Serravalle and Gavi ;

Guard, between Buzalla and Genoa.

Garibaldi, at Casale.

The advance of the Austrian army across the Sesia on the 8th May and an Austrian reconnaissance towards the bridge head at Casale again excited the keenest anxiety. (In war any show of activity makes an impression on the foe ; in action gives him courage.) On the 9th May therefore the news was received with amazement that the Austrians were withdrawing on Vercelli.

From the 7th to the 14th May the week passed in inaction, probably because the commissariat and supply arrangements were not fully complete.

A few Piedmontese troops and Garibaldi's force established themselves at Vercelli.

The 5th Corps began to disembark at Genoa. The Austrian reconnaissance towards Bobbio filled Baragnay d'Hilliers, commanding the Allies' right wing, with concern. Accordingly the first troops that landed were sent off to that place, a move that roused Gyulai's fear for his left flank.

On the 12th May the French Emperor landed and assumed the chief command.

15th May.—1st Corps, Novi ;

2nd Corps, advanced north towards Alessandria—Tortona ;

Guard, advanced to Cassano—Spinola ;

5th Corps, marching to Bobbio ;

3rd Corps, on the Po from Pomaro to Valenza ;

4th Corps, in rear and to south of the 3rd.

2nd Division Piedmontese and Garibaldi, at San Germano :

3 Divisions, Piedmontese between Alessandria and Casale ;
Piedmontese Cavalry distributed throughout the army.

On the 15th the Emperor inspected the position, which was on a front of nearly 40 miles. He found fault with the scattering of the forces, whereby the situation might be rendered dangerous and reminded them that the defence of a river line was better effected by assuming a central position, from which to break with overwhelming force upon an enemy caught in the act of crossing the stream.

This enemy had been standing since the 11th May on the other side of the river, expecting a general attack from the Allies on that very day, the 15th.

It is a question which of the two contending sides should have attacked on this day and which have deferred the crisis. Gyulai was expecting the IX and I Corps. Napoleon had only a division of the 5th corps to await. Had Gyulai had full information of the other's movements, he would have known that the time was past to cut in between the two wings of the allied forces. Napoleon on the other hand ought to have sought to bring about the crisis, as his superiority in strength was daily diminishing.

The way in which both sides took the greatest care for the defence of the river line is almost comical.

17th May.—By the 17th May all the Piedmontese were concentrated around Casale. The 4th Corps relieved the 3rd at San Salvatore, outposts on the Po, and joined hands with the Piedmontese at Casale. On the other bank of the Tanaro, the 2nd corps at Sale connected with the 4th, and on their right was the 1st Corps from Ponte Curone to Voghera.

The strategical advance was now complete.

18th May.—Garibaldi moved off by way of Biella and Gattinara to raise the flag of insurrection in the mountains and turn the Austrian right flank. Behind him marched three Piedmontese divisions, one of which on the 20th May occupied Vercelli, while two posted themselves between Vercelli and Casale, two others at Frassinetto.

The movement eastwards of French troops seemed to Gyulai to portend an attack on his left. The result was the battle of Montebello.

21st May.—Scared out of their first defensive position, the French took up a fresh one, fronting east.

- 1st Corps, Voghera ;
- 2nd Corps, Cornale, Casei ;
- 3rd Corps, Ponte Curone ;
- 4th Corps, and Guard, San Salvatore and Alessandria ;
- 1 Division, 5th Corps, Bobbio.

The Piedmontese made demonstrations on the Sesia. Garibaldi reached the Ticino near Castelletto.

22nd May.—The three army corps of the right wing made a slight movement forward, eastwards :—1st corps to Casteggio, 2nd to Voghera, 3rd to Cornale,

23rd May.—On the 23rd these three corps opened out a little to the front. The 1st corps closed up on Casteggio. The 3rd corps

marched on Voghera, about which place lay the 2nd. The Guard and 4th Corps moved a little eastwards. The Piedmontese remained on the Sesia. Garibaldi reached Varese, meeting with a warm welcome.

24th to 26th May.—On these dates no move was made. On the 26th Garibaldi successfully resisted an attack by Urban from Como. On the same day Prince Napoleon began to land the rest of the 5th corps at Livorno. The Emperor on this date made his second reconnaissance from Vercelli, the first having been made on the 21st.

The official French history of the campaign gives the slight eastward move of the right wing the name of a demonstration, carried out on purpose to encourage Gyulai's mistaken idea of the direction of the attack. As, however, more than half the army was employed in this manoeuvre it can hardly be termed a demonstration.

The French Emperor had reconnoitred Vercelli on the 21st and had set the Piedmontese in motion on that place, evidently with the intention of availing himself of the passages of the upper Sesia. Thinking that the combat of Montebello preluded an Austrian advance south of the Po, he provisionally gave up the idea and disposed the three nearest corps to withstand attack, advancing them slowly and cautiously 9 miles or so, as no enemy appeared.

It looks as if the French history wished to gloss over the Emperor's mistake, by which he lost seven days, and might have lost the passages of the Sesia and Garibaldi's force as well.

27th to 30th May.—The army began its movement on Vercelli 4th corps, at Borgo Vercelli, out-posts at Orfengo towards Novara;
3rd corps, Prarolo, opposite Palestro;
Guard, Trino;
2nd corps, Casale;
1st corps, Valenza;
Autemarre's division of 5th corps, Tortona.

The troops were therefore in these four days moved 40 miles to the left. When we consider how many a circuitous route had probably to be adopted in order to make it possible to use several roads at once (*e. g.* the Guard appears to have reached Trino by way of Pontessura,) and how replete with delay and difficulty such flank operations are where one corps follows behind another and the task of observing the enemy can never be interrupted we must acknowledge that this flank march was carried out with firmness and decision. We have already learnt moreover that the enemy knew nothing of it.

Details of this operation are wanting, and it is not known how many parallel routes were at the Allies' disposal. The railway, at all events the one running to Turin, seems to have been fully utilised, for the Austrian spies frequently spoke of railway transports from Turin.

As is well known, the less the distance to be covered, the less the strategical importance of the rail-road, which then stands second in importance to the ordinary route-march, because troops in the latter are always, in the course of the former never, ready for the fight at a moment's notice. Transport by rail, however, affords great assistance in the case of marches of longer than one day's duration at least, especi-

ally if an excessive accumulation of troops on one road can thus be obviated.

We have already remarked upon the difficulty of moving more than three corps one behind the other on one road. Here it was a matter of moving five divisions and five and a half army corps, which had been standing in close proximity to one another, to the left, and therefore certainly marching them one behind the other.

The execution of the manœuvre was considerably lightened by the existence of a rail-road and by the possibility of utilising parallel routes to the Po, by Casale and Pontestura, and thence to Vercelli, as the French historical account mentions. Nevertheless the arrangements must have been well planned, the efficiency of the staff considerable, in order to have secured the result of bringing the corps punctually to their appointed destination in order and well closed up, that is to say, the strategical executive machine must have been in very good working order. Unfortunately we are not in possession of the detailed accounts of how the marches were executed nor of the detail orders delivered, so that we cannot deduce any practically useful lessons therefrom.

In comparison with the operations of the Austrian army leaders in this campaign, the point strikes one favourably, as before remarked, that the corps were kept united in their own distinct organization.

That main principle of strategy too, to have at hand for the crisis every possible man for a simultaneous blow, is in this case carefully observed. The whole of the forces that had been standing in the defensive position south of the Po, were disposed along the upper Sesia with the exception of nine battalions of Autemarre's division (three battalions of which had been assigned to the King of Sardinia) and of the five Piedmontese divisions stationed on the Po from Alessandria to Casale. These nineteen battalions with a few cavalry were deemed sufficient to form a mask of demonstration opposite Gyulai's main forces. Later a large portion of these 19 battalions was sent on to Vercelli, to hold the river passages there, when the last regiment of Autemarre's division entered Tortona from Genoa. Nineteen battalions therefore sufficed to cover flank and rear. Compare this with the masses of troops, with which Gyulai covered his operations!

30th May.—Alarmed by the bridge construction taking place near Vercelli and apprehending that possibly the enemy might intend to cross the Sesia there in force, four Piedmontese divisions and the 4th French corps passed over the river on the 30th May at that point, forced back with ease the weak Austrian out-posts and established themselves $4\frac{1}{2}$ miles forward of Vercelli on an arc of a circle from Palestro by Confienza and Casalino to Orfengo. They thus formed a bridge-head for the rest of the army, which was to follow on the 31st, and entrenched themselves where they stood.

During the night Prarolo was connected with Palestro by three bridges, and when on the 31st the Austrians made an attack, they were not only opposed by the forces in themselves far superior in strength that had already crossed, but were also assailed by the French 3rd corps hastening up through Prarolo by these new bridges.

31st May.—Whilst on the 31st Zobel's combined corps was making fruitless efforts against superior forces, the 2nd French corps was brought up from Casale through Vercelli to Borgo Vercelli in one march of 18 miles, the guard marched into Vercelli as reserves, one regiment of the 1st corps was sent to demonstrate—with great success—near Valenza, while the remainder of that corps marched by three parallel roads to Casale. The 4th corps, however, the head of which was at Orfengo advanced by Camariano upon Novara and alarmed the enemy for the safety of his right flank.

On the evening of the 31st May the Allied troops stood as follows:—

The 4th corps on the left flank just in front of Novara (Camariano), four Piedmontese divisions to the right of it from Casalino to Palestro; on the right flank near the last named place the 3rd corps and the three battalions of the 5th. As reserves for the left flank the 2nd corps lay near Borgo Vercelli, the guard at Vercelli. The 1st corps were posted at Casale as reserves for the right wing, and now that three bridges had been constructed near Prarolo, could reach Palestro in a march of not quite $13\frac{1}{2}$ miles. Between Casale and Alessandria were the five Piedmontese divisions and in Tortona and Alessandria Autemarre's division.

Five French corps therefore and four Piedmontese divisions were on the evening of the 31st May united on a front of less than 9 miles and a depth of at the most 14, not $2\frac{1}{2}$ miles from the just repulsed enemy and separated from him by no obstacle worth mention.

Picture the first Napoleon at the head of this army. Do you not at once call to mind his concentrated position behind the heights of Pratzen on the morning of Austerlitz, and how he dashed out and surprised the Allies?

1st June.—No such attack took place on the 1st June. We have already learnt that on the 31st May Garibaldi had failed in an attempt to surprise the enemy near Laveno and was now drawing numbers of the enemy upon himself in that neighbourhood. Napoleon on the 1st June manœuvred the left wing of his army a little further east.

The 4th corps at day break took Novara with ease and drove Mengen's trifling force back to San Martino. One division followed up in this direction at a short interval of distance; the rest of the 4th corps placed itself in a defensive position south of Novara fronting towards Mortara. Behind this corps, south of Novara, was the 2nd corps posted in reserve. The guard was drawn up to Novara itself. The 1st corps with one brigade from the five Piedmontese divisions marched from Casale to Vercelli and Borgo Vercelli, four of the Piedmontese divisions and the 3rd French corps stood fast in sight of the enemy. As the inhabitants of the district reported that the enemy had abandoned Robbio, that place was occupied.

2nd June.—On the 2nd June the movement towards Magenta and Milan from Novara was commenced, whilst Espinasse's division of the 2nd corps was pushed forward on San Martino, and Camon's division of the guard upon Turbigo. The latter division found nothing but

hostile patrols in front of it, dispersed them, threw a bridge across the Ticino and firmly established itself at Turbigo; Espinatte's division reached Trecate and observed the bridge-head of San Martino. The 1st army corps reached the Agogna near Lumello, between Novara and Camariano. The remainder of the army stood fast. Only Autemarre's division sent three battalions to Vercelli.

The 3rd French corps and the Piedmontese army were given orders to follow next day to Novara. To cover the flank march of the whole army the 4th corps remained in position south of Novara, fronting towards Mortara.

We know that on the same day and in the same way the III Austrian corps was in position north of Mortara fronting towards Novara covering the flank march of its own army.

These two corps thus stood opposite one another the whole day, each expectant of attack, each glad not to be perceived, and consequently without falling into collision with one another.

3rd June.—On the 3rd June it became necessary for the 4th corps to reconnoitre the enemy. Two divisions—de Failly's and de Luzy's—proceeded southwards, found the enemy's position abandoned and thus brought in the intelligence of the enemy's concentration on the Ticino. The Emperor was not yet aware on which bank the concentration would take place. He accordingly kept the 1st and 4th corps in their position in front of Novara so as to intercept an attack from a southern direction, united with these corps the 3rd from Palestro and marched the 2nd to Turbigo, whilst the other division of the guard (Mellinet's) was pushed forward towards San Martino. With what care the organisation in corps was preserved by Napoleon, is evident from the manner in which he had Espinasse's division relieved by Mellinet's and despatched to Turbigo to join its own corps. The four Piedmontese divisions were also brought up from their position on the Palestro—Casalino line to and through Novara. Two of them were advanced south of Novara in the vicinity of Lumello near the 1st corps, the other two in the direction of Turbigo as far forward as Galliate.

On the evening of the 3rd June the situation of the army was as follows:—

The 2nd corps and Camon's guard divisions at Turbigo à cheval of the river, and $4\frac{1}{2}$ miles from that place; at Galliate two divisions of Piedmontese.

Mellinet's guard division in front of San Martino at Trecate.

In the Novara position, the 1st, 3rd and 4th French corps and two Piedmontese divisions.

Of Autemarre's division of the 5th corps two regiments (6 battalions) were now employed in the occupation of Vercelli and three regiments (9 battalions) remained at Tortona and Alessandria. The 5th Piedmontese division was left distributed along the Po and Sesia.

Consequently there were, ready for the passage of the river at Turbigo, the 2nd corps (two divisions,) one division of the guard and two of Piedmontese, total 5 divisions.

In the neighbourhood of the point of passage at San Martino there was only the other Guard division. But the remainder of the army (11 infantry divisions) in a position fronting to the south were not further than 7 miles distant and could soon be directed on Magenta by way of San Martino, if the San Martino passage proved available.

4th June.—The Emperor's plans for the 4th June, as given by the official work "*Campagne de l'Empereur*," are completely unintelligible. According to this account his intention was to take up a position on the 4th June fronting south, left flank (2nd corps) at Magenta, centre (3rd and 4th corps) at San Martino and Trecate, and right flank (1st corps) south of Novara; the Piedmontese at Galliate in reserve. Such a position, the front uncovered by any obstacle, the flanks *en l'air*, *à cheval* of a river forming a tactical barrier, which had no bridges, would not have been a position at all.

Since the Emperor Napoleon III had been acting on the whole with sound judgment, Fruston's account of his plans seems to be the more correct one.

According to him the Emperor's intention was to push on to Milan and to demonstrate from San Martino toward Magenta only long enough to give time for the turning movement from Turbigo round the enemy's flank to develop so as to facilitate his debouching across the Naviglio Grande. As long as the possibility remained in view of the enemy being able to advance from the south towards Novara, the troops at that place were to stand fast in their position and only to be brought up to Magenta through San Martino, as they were needed or after they proved not to be wanted at Novara, in order to turn the early demonstration then into a serious attack.

This in fact was the way in which events actually occurred, and so Fruston's relation of the Emperor's plans savours of course somewhat of having been influenced by events, having been written after them. But his account fits in too well with the situation, with the Emperor's previous proceedings, it is too genuine, natural and sensible for me not to put credence in it.

The Emperor's general plan therefore was, as was evident from his march from Vercelli upon Novara, to reach Milan. The possibility of yet being attacked on the right (western) bank of the Ticino from the neighbourhood of Mortara or Vigevano, precluded his carrying out this plan at once with all his forces.

As regards original intentions, we are obliged in the case of a Monarch to have recourse to *guessing*, whilst in the case of a General who is obliged to report first to his monarch, we have the opportunity of *knowing* from his reports what his plans were. This is a point in which a monarch, commanding his army, has a strategical superiority over a General who is dependent on his government. If the former has not imparted his plans, he can more easily depart from them without stultifying himself, whilst the latter is more bound to the line he has once adopted and has always to give an account first of his intentions.

4th June.—At 10 o'clock in the morning of the 4th June Mellinet's division of the guard began to defile across the bridge at San Martino.

It commenced a slight action at the passages over the Naviglio. The fight there then languished until after midday, as the Emperor desired to wait for the effect the troops from Turbigo would make upon the enemy's flank, before he seized the bull by the horns. When then the fighting near Buffalora became audible, Mellinet's division began to attack in real earnest.

M'Mahon had broken out from Turbigo, had attained only a temporary success with one division, and was obliged to wait for the arrival of the remaining divisions.

Meanwhile Mellinet's division stormed the passages of the Naviglio Grande but was repulsed by reinforcements brought up by the enemy and reduced to an evil plight. (3-20 P. M.) It was freed by Renaud's division. The appearance of the head of the Austrian III corps on the flanks of the French divisions from the south on the west bank of the Naviglio again placed the French troops in serious danger (4-30 P. M.) Soon, however, (4-45 P. M.) succour arrived with Trochu's division of the 3rd, and Vinoy's division of the 4th corps from San Martino.

By this time M'Mahon had completed the advance of his three divisions marching up from Turbigo, which were followed by the two Piedmontese divisions in second line, and had begun the attack from the north with an energy that would not be denied. The capture of Magenta ended the battle as darkness closed in.

The night that followed the troops stood as follow:—

The 3rd corps with two divisions at Ponte Vecchio on the Naviglio. The third division came up in the course of the night from San Martino.

The two Guard Divisions north of Magenta and at Buffalora respectively.

The 4th corps with one division close to the 3rd corps, the other two west of the Ticino near Trecate.

The 2nd corps at Magenta.

The 1st corps west of the Ticino at Olengo.

Of the two Piedmontese divisions two spent the night in and north of Magenta, whilst the other two stood on both sides of the Ticino at Turbigo.

Of the troops on the ground the following had been engaged—

Guard.....	2 divisions.
2nd corps.....	2 ditto.
4th corps.....	2 ditto.
3rd corps.....	1 ditto.

Total..... 7 divisions.

The following were intact:—

1st corps.....	3 divisions.
4th corps.....	1 ditto.
3rd corps.,.....	2 ditto.
Piedmontese.....	4 ditto.

Total..... 10 divisions.

The infantry divisions only are mentioned, because they alone in the very intricate terrain decided the issue of the battle.

From this it appears that about an equal percentage on either side took part in the engagement of the 4th June, and an equal number would have been available for a renewal of the fight on the 5th.

The Emperor was so little aware of the victory he had gained, that he allowed his army to remain halted on the 5th, and even three Piedmontese cavalry divisions to recross the Ticino and to concentrate at San Martino, a measure of a purely defensive nature.

The accounts at hand regarding the Emperor's strategical directions during the battle are incomplete. The deficiencies can, however, be sufficiently filled up from the facts.

M'Mahon's five divisions employed in the turning movement by way of Turbigo were followed up by two other divisions of Piedmontese from the neighbourhood of Novara. (By evening only one of these had crossed the Ticino at Turbigo.) This proves what importance the Emperor laid on this turning movement.

For the frontal attack from San Martino on the Naviglio the Emperor up to midday disposed of one division (Guard) only. At half past 3 o'clock only in the afternoon one division of the 3rd Corps and at a quarter to 5 another of the 3rd and one of the 4th Corps entered into the fight on the Naviglio.

It must strike one that Mellinet's Guard Division which had crossed the bridge over the Ticino at 10 A. M., was left to its own resources for almost six hours in a most dangerous position and received its first reinforcements from the 3rd Corps very late, while the distance from Novara to the Naviglio amounted to only 9 miles and that from Treca, where the left wing of the 4th Corps stood, to only $4\frac{1}{2}$ miles.

This is only to be explained by supposing that the Emperor up to midday on the 4th June was certainly expecting an advance of the Austrians from the south along the west bank of the Ticino, at all events considered that he must be prepared for such an eventuality.

Five years after the war Prince Kraft states that he was once talking over the campaign with a French officer who had been an orderly officer of the Emperor at the battle of Magenta. The Prince remarked that he could not understand why Gyulai had not attacked on the right bank of the Ticino as Radetzky did in 1849. The French Officer replied, that now that he thought of it, this explained the course of thought of the Emperor with regard to an order, which at the time he took for a display of mere obstinacy. The Emperor had given him an order to call up the 3rd Corps in support of Mellinet's Division. He observed to the Emperor that the 4th Corps was nearer and could bring help much more quickly. The Emperor however sharply and very distinctly repeated the order—the 4th Corps to stand fast, the 3rd, behind it to march up in support.

In the afternoon as no enemy was yet reported in front of the 4th Corps and the critical situation on the Naviglio grew more threatening, the Emperor may have sent orders to the 4th Corps to march and have pushed one of its divisions on to the road at the San Martino bridge in front of the rearmost division of the 3rd Corps.

This officer's utterance in any case confirms the supposition that it was from anxiety lest the Austrians should make a flank attack from the south, west of the Ticino, that the Emperor delayed so long before bringing more troops across the river at San Martino.

Concluding remarks.—Might the Allies not have done better, had they chosen the point of concentration in such a way as to cover the capital of Sardinia, Turin?

On the choice of the point of concentration.—Unquestionably the point of the strategical advance must be chosen so as to cover the base of an army, and unquestionably the capital of a territory which is the base of an army, forms a vital point in the base, for there the threads of administration all converge and public and private means by which the requirements of an army are supplied, are there united. Consequently the occupation of the capital by the enemy upsets the whole administrative machine and prejudices the fighting capacity of the army itself. Turin however was only the capital of the base of a small portion of the allied army. The real base consisted of all France and Sardinia. The Allies were accordingly compelled to take into consideration whether the greater harm would be done at the outset of the campaign by the occupation of Turin by the enemy or by his interruption of the strategical advance, that is to say, of the concentration of the different portions of the army marching widely separated. They had next to choose the lesser evil.

The result proved the French corps, that marched across the Alps, joined hands with the Piedmontese forces at Alessandria sooner than the forces that were directed through Genoa. The latter would accordingly have reached Turin still later; which means, that more time would have been required for the purpose, had the strategical advance been arranged to take place about Turin. From a strategical point of view therefore, a concentration near Alessandria (San Salvatore) was desirable. A temporary occupation of the Piedmontese capital by the enemy appeared the lesser evil, the interruption of the strategical advance the greater. Besides the Allies might, if the enemy marched north of the Po to Turin and gave them time to unite sufficient forces between Casale and Alessandria, fall upon him in rear from Casale and repay with heavy interest the harm done by a temporary occupation of Turin.

The French official account informs us that their leaders had made up their minds for temporary occupation of Turin by the Austrians and took comfort in this thought. Such stoical adherence to what had been once recognized as strategically correct deserves full acknowledgment from us. It led to a happy result. It affords a fresh illustration of the principle that in war it is of importance to adhere to a plan once formed, whilst an all too anxious seeking and striving after the Best leads easily to such frequent changes of plan, that the army is dragged hither and thither and no result whatever is effected.

Napoleon III's Strategy subordinate to Policy.—When the strategical advance was fully completed in accordance with the Emperor's plans, it strikes us as strange that the allied army should have lain in-

active for nearly a fortnight, adopting measures of defence only, although the Austrians had far more reinforcements to expect than the Allies. Allusion has already been made to this and we have proved to our own satisfaction that the Emperor ought from purely defensive grounds to have undertaken the offensive on the 15th or 17th May, but he made strategy subordinate to his policy. Let us here elucidate Napoleon's strategy in this regard.

He owed his crown in no small degree to revolutionary circumstances and political agitations as much as to the popularity in France of his family name. Unlike his uncle, who had founded his power on victories and warlike reputation and upon the subduction of revolutionary circumstances, he was without any reputation as a warrior. It is true that his army had brought the Crimean campaign to successful issue. But his personal reputation had not gained thereby, but rather threatened to pale before that of his Generals. He now required some fame as a leader, in order to steady his power, which was staggering on a cranky ship, that intangible, undefinable element which he called "public opinion". Parties of most varied opinions in France were warring together under the surface of the waters. The Emperor's plan was to fall out with none of these and eventually to make use of each in turn.* The occasion of Orsini's attempt made him aware that the revolutionary principle which had raised him, now stood in direct hostility towards him. He thought it well to make his peace with that party, and threw it the bait of the Italian propaganda. At the same time he desired to turn this change of policy to strategical use. His plan accordingly became to give the propaganda of revolutionary Italian agitations time to gain a distinct importance, before he exposed his well-ordered army to the vicissitudes—as yet strange to him—of the fortune of war. The insurrection all round the Austrian army and even within the sphere of its authority was to attract to itself or to fetter a considerable portion of the enemy's forces, before he stepped in to interfere, which he only purposed doing in such superiority of strength as would preclude any possibility of failure. For if on the one hand he needed the glory of war to establish his authority, he dared not on the other expose himself to defeat. He knew the shaky condition of his power too well not to feel that the loss of a battle conducted in person by himself might drag after it the loss as well of his crown.

Garibaldi was therefore to be sent off to the mountains north of Lombardy with his Alpine riflemen, there to raise the standard of revolt. The rising in Tuscany was first to take definite shape and with the help of Prince Napoleon's single division of Infantry and Cavalry form a nucleus round which the revolutionary forces of that district might crystallise and consolidate. In conjunction with these threats revolutionary conspiracies at Parma and Modena were to inspire the enemy with anxiety for the safety of their other flank. At the same time a great deal was made of an expedition that was to land on the Adriatic littoral and to form the nucleus for an insurrection in the districts of

* A French officer connected with the influential circles told me: "Le système de la politique intérieure de l'Empereur est un chef d'œuvre de balance."

Trieste or Venice. This expeditionary force probably existed at no place or time except on paper. But the Austrian account of the war asserts that in Austria it was estimated at the strength of an army corps.

At all events insurrections and demonstrations necessitated an incomparably larger expenditure of forces to the enemy, than they cost the Allies. Austria saw herself compelled to retain a special army of two Army Corps with headquarters at Trieste for the protection of the Trieste and Venetian coast and of the mouth of the Po as far up as Borgoforte. Garibaldi by his insurrectionary movements engaged the attention from time to time of Urban's Division and of all of the I corps that came into the neighbourhood of Milan and Magenta. Within the vicinity of Piacenza as far as the mouth of the Ticino, Gyulai considered the presence of the whole IX army corps and a brigade of the VIII corps necessary for defence, even when all the hostile regular forces had disappeared from the neighbourhood and he urgently needed his troops at Magenta. The intelligence brought by spies informed Gyulai on the 29th May that he might expect attack by 30,000 Tuscans and he prepared himself for an assault on flank and rear by 42,000 French, Tuscans and other free corps.

Thus inactivity and a defensive attitude up to the end of May gained the Emperor Napoleon no greater increase of force than it did the enemy, but it weakened the latter by fettering a part of his forces.

Blume says that after the outbreak of hostilities the position of affairs is governed by the regard, that the hostile forces must be as quickly and completely as possible overwhelmed. Napoleon in this case acted otherwise. He delayed in order to ensure time for political agitations to develop. Success proved his to be the right course to have taken. Bronsart however states with much truth, that more than one example is necessary to establish a strategical truth. The procedure of Napoleon in 1859 now under our consideration can not yet therefore be accepted *in toto* as a pattern to imitate, merely because it was once accompanied by success. In 1870 it failed to serve him.

Reasons for Napoleon's neglect to attack on 1st June.—One would have expected Napoleon to attack in front the troops facing him at Robbio on the 1st June, while a simultaneous flank attack by the 4th corps from Novara would have completed the victory.

The concentration of masses of troops to the front implies considerable hardships for the men. The food supply always suffers and is constantly more or less unsatisfactory. It is therefore only when the intention is to pass at once to the battle, that masses are collected together in so small a space. If the battle is not the object of the concentration, the latter becomes a mistake. If the crisis is not arrived at immediately after the concentration without pressing reasons, the delay is a mistake. If for other reasons the crisis is not brought about immediately after the concentration, it always conduces to the disadvantage of the army.

Here Napoleon had no pressing reason for not bringing on a decisive action. The Austrian official account relates how well the French were

informed of the Austrian position. Indeed a French General expressed his astonishment to an Austrian officer, who had been taken prisoner, that the attack of the 31st May was followed up with such few forces and said that in the French army they had had clear intelligence of the strength of the Austrian troops.

Napoleon must therefore have been aware, that he would have at first only 2½ army corps to deal with on the 1st of June, to which for the present Reischach's division from Candia could alone bring assistance. These three corps had been defeated the very day before. If then he had attacked at day-light on the 1st June, he might have completely accounted for this force of the enemy in the course of the forenoon. Even if Gynlai had brought up the V and VIII army corps from the Po later on the 1st June, so as to reinforce with these two corps in the afternoon, it still lay in Napoleon's power to summon the guard from Vercelli and the corps that was at Casale, by way of Prarolo and Palestro and to have preserved his superiority. Under any circumstances the defeat of the enemy on the 1st June would have been much more easy than on the 4th, when the San Martino defile, rendered difficult by the partial destruction of the bridge, had to be passed and the passages of the Naviglio to be forced, so that he could only gain breath by a toilsome circuitous march over the Turbigo defile.

Every strategical consideration accordingly urged the Emperor to attack on the 1st June. Nevertheless he neglected to do so that day.

Instead, he halted the troops that were close in front of the enemy, and initiated the strategical turning movement, which was to lead him to Milan, by advancing the corps on his left flank a trifling distance through Novara and by closing to the left the forces in second line (2nd corps, guards, and 1st corps) under cover of the troops facing the enemy.

What reasons may have induced the Emperor to abstain from an attack on the 1st June? Again no explanation except regard for his own particular political position can be found.

He may have felt a disinclination to expose himself to the vicissitudes of a decisive action, because his personal position in France was unequal to the loss of a battle. He desired to operate with caution and absolute security. In occupation of Novara he was nearer to Milan than the Austrian army south of Novara in the Lomellina. He hoped that the appearance of French troops in Lombardy would inflame the minds of the whole country side, especially when he should succeed in joining hands again with Garibaldi. He may have reckoned upon threatening the rear communications of the hostile army by this rising, to make its stay in the Lomellina impossible and to force it to retreat behind the Vinicio. In this manner Lombardy would fall into his hands almost without a blow, at any rate without a great battle. In his retreat through a country in insurrection the enemy would have suffered considerable losses. Opportunity for military glory would not have been wanting, for the French army would merely have found it necessary to pursue, and pursuing actions always finally end in such a way that one can blazon them forth as victories. The conquest of Lombardy

by mere manœuvring without a battle, without great losses among the children of France, would have substantially enhanced the brilliance of Napoleon's personal talent for strategy. Perhaps even then he cherished the thought of not verifying to the letter his first bombastic utterance. "Italy free to the Adriatic." An altogether too strong Italy might at some later date show herself hostile to France. A weak Italy entirely dependent on him suited his calculations better. Perhaps, when he had manœuvred Austria out of Lombardy and if he had galled the Austrian army by no well fought victory, he might be able to conclude peace and friendship on the Mincio. It is possible that all this turned the scale in his calculations. Later events confirm me in this conclusion.

The out-flanking manœuvre.—In short he resolved on further out-flanking the intact enemy. It was not long before he experienced the truth of the well known principle, that the out-flanker is always himself out-flanked. His maxim which is often heard in connexion with tactics, has in strategy greater value still. An unbeaten enemy can not be out-flanked with impunity unless the opponent is much the stronger and employs his surplus of force in the turning movement, but even then only on the indispensable condition of holding the opponent by frontal attacks and of preventing him from throwing himself upon the out-flanking force, as the first Napoleon did at Wagram whilst Davout turned the enemy's left flank, as happened at Magenta, and as was carried out on the 14th August 1870, by the first German army, whilst the second secured the passages of the Moselle south of Metz by a turning movement.

The very next day, the 2nd June, the situation in which Napoleon saw himself placed by his flank movement, already showed its paralyzing effect. He had not more than fourteen miles to go from Novara to Magenta. Why did he not push on thither with the three corps collected at Novara? Because by so advancing he would compromise his single line of retreat upon Vercelli, as long as the Austrian army could still threaten him from the south. He contented himself with pushing a division each to San Martino and Turbigo to reconnoitre and bringing up the first corps as a reinforcement into the neighbourhood of Novara (Lamelloquio). The whole of the rest of the army stood fast on the 2nd June!

A turning movement which comes to a standstill for a whole day and more, loses the most telling part of its effect, for it gives the adversary the time he needs to avoid it or to utilize it by a well-timed attack on the aggressor's front or upon his turning force to his disadvantage.

On the 3rd June again his position as an outflanking force acted with paralyzing effect on the Emperors's movements. He was aware that the passage of the river at San Martino was to be easily gained, while that at Turbigo was in his hands, nevertheless he dared not bring up to Novara the Corps—the 3rd and the Piedmontese—which were covering the Sesia crossings, and push on any considerable force—2nd Corps—to Turbigo, until a reconnaissance southward in the direction of Mortara had satisfied him that no threatening danger was approaching from that point. On the 3rd June therefore there was nothing more to

be done than to despatch a corps to Turbigo to join the Guard Division and to bring the rest of the main forces up to Novara. Still, even at midday of the 4th June, the Emperor, as I showed in my last letter, made up his mind that an attack would be made from the south (Vigevano) and was by this prospective danger hindered from employing the whole of his available forces on the 4th June at Magenta.

By delaying nearly two days for the sake of executing his flanking movement he renounced the advantage of the element which makes victory almost as much assured as superiority of strength, namely surprise. On the evening of 2nd June the enemy ascertained that the crossing at Turbigo was in the enemy's hands, but it was not until the morning of the 4th June that French troops were set in motion to effect the passage in such force as was necessary to throw the weight of decision into the scales.

We saw how Gyulai need only have sent his more distant Corps orders to march upon Magenta on the morning of the 4th instead of in directions to merely be ready to start up to mid-day. Had he on the 4th June driven the French Divisions that had succeeded in crossing San Martino from the Naviglio into the Ticino and warded off M'Mahon's troops so as to hunt them back by Turbigo on the 5th, the result of his strategy as compared with Napoleon's would have borne the palm. The name of Gyulai would have stood high in the history of the Art of War, and he would have been termed the Fabius Cunctator of the 19th century—What strategical and political effects would have ensued we will not further discuss, but the lesson we learn is that luck plays a most essential rôle in the fate of battles, and it leads us to believe, did the war of 1806, that there is a Power above us ruling the issue of battles in which the fates of nations are laid in the balance.

Napoleon III then did well in acting with great caution, for he was not in a position to be able to support the loss of a battle; nor was he in the position of his uncle when during the most brilliant period of his career, 1796 and 1797, he could hazard everything, because as yet he had nothing to lose and everything to gain. The third Napoleon had a splendid crown to lose and saw nothing much in Italy to gain.

He was not in the position in which his uncle found himself in his later campaigns, accustomed to the ordeal of battle and taught by his personal experience that true caution consists in a well-timed energetic offensive with forces united and in the improvement of the moment when which superiority is his own, and that such an opportunity does not easily recur.

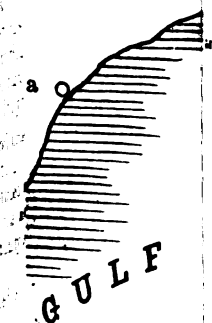
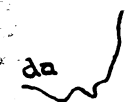
Ill-timed caution may conjure up dangers. Ill-timed caution hindered the third Napoleon from seizing the opportunity for a brilliant victory on the 1st June. Ill-timed caution led him to resolve upon an undertaking, with which far greater dangers were bound up than the issue of an offensive battle carried out by superior forces on the 1st June. Finally he won an extremely doubtful victory at Magenta, for he was himself after it compelled to at once adopt measures of defence and was not fully aware of his victory until 24 hours later.

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In fact he is the victor, who commits the fewest mistakes—"C'était à qui faisait le moins de fautes," as the Great King said of the battle of Chotusitz.

Had Gyulai employed the 5th June in putting into the first line the corps unengaged on the 4th and in reorganizing and reforming under their protection Clam's broken forces, he might have been in a position to command attention on the 6th. The battle of Magenta would then have had no further result than to throw back his right flank instead of becoming through his retreat a battle lost.

Analogy of Sedan.—It would almost seem as if Napoleon by the successful result of his out flanking manœuvre in 1859 had been led to attempt a similar manœuvre in 1870, and to march M'Mahon's army from Chalons round the enemy's right flank. It is true that Napoleon only took part in this last operation as a spectator and that M'Mahon was acting against his own wishes and under express orders from the Ministry. The analogy however is unmistakable. On each occasion the French army manœuvred to turn the right flank of a still undefeated enemy. Both marches led close by the frontier, along the southern foot of a range of mountains. In 1859 the enemy allowed himself to be overawed, retired on a parallel line of march in order to offer himself, fought eventually with forces disunited and was defeated. In 1870 the enemy proved that the out-flanker is himself out-flanked, took him in flank and destroyed him.

ON DETAILS OF AMMUNITION SUPPLY IN THE FIELD.

BEFORE THE BOMBAY MILITARY SOCIETY.

IN THE CHAIR

Major-General BLUNDELL, Commanding Poona District.

Lecture at Poona by Lieut.-Colonel B. PEILE, Commanding 2nd Grenadiers.

GENTLEMEN,—A suggestion having been made that officers be invited to read papers on professional subjects in connection with our Military Society and volunteers, having been called for to address its members, I have ventured to set the movement going by reading the first paper this season. I do so with some diffidence, partly because I have never undertaken such a task before, but principally because I feel that unless the papers read are of sufficient professional merit to secure your interest the very object we have in view, namely the insurance of the vitality of the Institution, will rather be lessened than increased. It is for you to determine whether mine is such a paper. The subject I bring to your notice this afternoon is

The DETAILS of Ammunition supply in the Field.

The general subject of Ammunition Supply has commanded gradually increasing attention from the very introduction of fire-arms, down to the present time. Prior to the days of "Brown Bess" all that had to be done was to fill a man's pouches and thereafter to let him put his trust in Providence, and keep his powder dry. But later on the man began to burn his powder too fast, and, since the introduction of the breech-loader, cases have occurred over and over again of a failure of ammunition, at a critical moment. The general subject has been dealt with by many able writers, amongst them being the compilers of the last Drill Book. *That* book, gentlemen, when I gazed on its covers, was a source of infinite satisfaction to me. I had expected a huge tome. I received a little thin hand book. It gave promise of the Infantry Officer's technical troubles being done away with, and so far as the removal of *conundrums* and catch movements were concerned, its promise was fulfilled. But I soon found that in it was distinctly traceable the spirit of the *General* and that, except in a few of the early pages, the *Sergeant Major* had had little to do with it. In other words it deals with matters on broad principles, leaving details to the Regimental Officer. Its first perusal left an uncomfortable feeling on my mind that I had read it in much the same way as the young lady did Euclid—in about half an hour, without seeing what there was of difficulty in the reading—the fact being that in the working out of these details lies the

whole gist of our duties. To illustrate my meaning I will give an example. One afternoon I thought I would introduce some variety into the Drills of my Regiment by practising ammunition supply on the details of which the Drill Book is silent. I had out a few boxes of ammunition to be issued to the men, and in less than ten minutes, instead of the cheerful, well-regulated Battalion I trust I usually command, I had before me a noisy and turbulent mob—"There was not enough ammunition for doing it," said the Quarter Master. "Who is to bring it us," asked the Captains. "How are we to distribute it?" enquired the Sergeants. "Where are we to stow it," said the men—"it wont go into the pouches." "How am I to get it all back?" said the Quarter Master Sergeant—Whereafter I fled—betook myself to my office to thresh the matter out, with the result that what I hoped was going to be a half hour's instructive parade, took me a good two months' thought and some experiment to put into anything like an orderly procedure.

The First Difficulty.

The first difficulty is the ammunition. For practising this supply even with three sections over 14,000 rounds are wanted for the M. H. Rifle. This would necessitate the opening up of any number of boxes, repacking, damage from wear and tear, loss from dropping of packets, which being of brown paper are difficult to see on the ground. Besides this, with our pouch equipment, owing either to the compartments having been made too tight, or to shrinkage of the leather, the packages have to be forced in, and are thus damaged, and many will not admit them at all. To obviate the opening out of boxes of ammunition, I had a number of blocks made—composed partly of wood, party of lead,—exactly of the same weight and dimensions as a packet of M. H. ammunition, brightly painted so as to be easily seen when dropped. Each man in the Regiment now carries one such block as is here before me: that amount when it is all called in suffices for the practice of three weak sections carrying 780 packets. I am having another set made now. So that each man will have two to be carried always in the pouches, which will also ensure that they are at all times kept properly sized to receive real packages, and will enable each Wing to carry out the practice.

The next point claiming attention is the distribution to companies.

Ammunition Carriers.

it will be remembered, are fallen out and placed under command of an officer. So *they* cannot do the work (Drill Book p. 136.) The Book, however, *does* say that the ammunition of dead and wounded is to be collected (p. 138). If men are allowed to fall out of the firing line to do this, skulking would be distinctly encouraged. I, therefore, detail a special man from each section for this duty which, the Drill Book notwithstanding, I submit it will be impossible for those in the supernumerary rank to perform. By my plan, in execution of this duty, the Searcher usually has to go *forward* of his company, not to hang *behind* it; and when his particular section is reinforced, he obtains a rifle and ammu-

nition from a casualty and falls in, his place being taken by a man from the next succeeding body, say, the Reserve. It is this man who is told off to obtain the extra ammunition and to supply the men of his section from the Ammunition Reserve before the engagement commences, thus, two men are taken from each section—chosen as being strong, active men—one, the Searcher, with white wallets, who returns with and distributes ammunition to his section; the other, the Carrier who remains with the rest of the Carriers, under command of an officer, to be sent forward, when needed. The detail of how the distribution is carried out, is referred to, hereafter, in considering a suitable drill for the purpose.

The third point is the

Carriage of Ammunition.

For this purpose, Government has provided a garment, by no means perfect, capable of great improvement, but not at all a bad one for a Searcher who has to stow away loose rounds, and who is not required to rapidly cover ground, and with limbs free to surmount obstacles, as a Carrier would have to do. To enable the Carrier to perform his work properly, the weight to be carried, should be scientifically distributed over his body, not be dragging at his heels; and should be arranged with a view to a rapid distribution of packets, after arrival. These requirements, I have endeavoured to meet by the equipment shewn in use, which consists of a "bandolier," with leather compartments, into which the packets of ammunition are slipped sideways, this bandolier, you will observe, has the appearance of a cork life-belt, such as is worn by the men of the life-boat crews. The edge of one packet keeping the others in place, the end ones are closed, so that, if the belt is doubled (the object of which, I will explain later) the packets are still kept in place by the last one not slipping out. Three such belts strapped around the body from waist to chest one above the other, are one man's load, and weigh about 35 lb.—the maximum weight for a Carrier according to Regulation being 40 lbs. (I. D. 113.) The belts I have were made up Regimentally and would, of course, be better turned out Departmentally.

On being sent forward and arriving at the firing line, the Carrier unbuckles his belts in succession, throws them to men in the firing line at intervals, and thus the distribution is as rapid as I think it possible to be. He then gets a belt and rifle from a casualty and falls in in the firing line. By doubling or folding these packets over a bar, eight to ten bandoliers could be carried, on each side of a pack saddle, on a mule, and if these were properly fitted and firmly secured to pads, and covered with waterproof material I believe that the arrangement would be a better one than the present carriage of boxes, especially for mountain service. I have given the

"Bandolier" v. the "Bag"

system an impartial and exhaustive trial. I have made men run races of two and three hundred yards and longer. The greater the distance

the greater the lead of Bandolier. Yesterday I fitted the men now before you, gentlemen, first, the taller man as a Bandolier—the next as a Searcher. In each case the Bandolier carrier won. The man invariably prefers the bandolier, which gives him the use of his arms—an important point in hilly or intersected country,

You will observe that both men before you are wearing a small flag each in their head-gear. These have been employed with great advantage on both sides, I read in Mayne, in the Russo-Turkish War, firstly, as a guide to the Carrier to re-find his Company, and, secondly, to the men in the companies waiting for ammunition, as they can see whose ammunition is coming up. Then the flags are not large enough to attract the enemy's attention. They may appear somewhat pantomimic to my brothers-in-arms of the British Service, but in shape and colours they are characteristic of the tribes and castes of which the companies of my regiment are composed. I am assured by my Native Officers that their recognition, in case of a crisis would have marked effect, and the selection of shape and colour was a matter of grave consideration to the men. For instance, it may interest you to learn that the Sikhs abhor green, the typical Mahomedan colour, while ochre yellow clothes were always worn by Rajputs when it was to be understood that no quarter would be given or asked for.

The Drill.

Thus equipped, there remained the question of working out a drill for practising the supply of ammunition. It has to be borne in mind that to practise it at all—as a man starts with 90 rounds, and has therefore crammed every space with ammunition—he must drop packets before he can receive any more, and the packets dropped represent rounds fired. In this dropping of packets, so risky—nay impossible—with real ammunition, brightly painted blocks are useful.

The object in view in carrying out the drill is to assume the greatest possible amount of firing, and concurrently supplying ammunition by carriers, to ensure that at the moment the assault is delivered, the men in the firing line have an ample, and more than an ample, supply of ammunition in hand. If at that stage, then, namely, on reinforcement by reserve who arrive with 90 rounds, the previous firing line has 70 rounds per rifle, I think we can say that the system is sound. This, the one I bring to your notice, provides for, with an assumption of extremely heavy firing, inclusive of long range in lieu of artillery fire. As to supply of ammunition in the final stage of the attack, the Germans and Austrians have considered that no reliance can be placed on any scheme during the final stages of an action, *i.e.*, under 500 yards (Mayne 2nd Edn. p. 302.)

As to the drill painful experience has taught me that not the least reliance is to be placed on taking anything *for granted*. If the men for the attack are supposed to have 90 rounds on their persons, let them carry blocks, and you will soon see the difference in the movements of the men, while the practice is a good one in so far that it accustoms them to carry weight. If a carrier has something like 40lbs. dead

weight in covering ground he will do it in quite a different style to his representative on a field day with a few blank rounds in his bag.

Before laying before you the detail of the drill I have adopted I would claim your attention to the table of ammunition and carriage required.

Colonel Curtis, the Assistant Adjutant General for Musketry, to whom I showed my scheme a short time ago, and who was good enough favourably criticise it, sent me the modified scale of ammunition for troops in India. Want of time has prevented my taking that as a basis for the table instead of the one shown previously prepared. The principle, however, is the same, details only have to be modified. The remark applies also as to supply of the Lee-Metford in lieu of H. M. Ammunition.

As to the drill you will observe that it is simple, and I can assure you that it works smoothly and well; but I am by no means prejudiced in favour of my own particular doxy, nor hold any one else's heterodoxy should the discussion which follows bring out any points for consideration—alteration or improvement I shall be happy to give them an impartial trial.

In conclusion I would impress on those of you, gentlemen, of less experience than myself that the attention to details is as essential for the efficiency of a regiment, as *esprit de corps* is for its well-being, and if there is one thing above another that stamps a man as a bad regimental officer, it is the tendency to ignore this fact.

General Blundell and officers I thank you sincerely for the courteous attention you have given to the views I have had the honour of placing before you to-day.

Lieutenant-Colonel Cockburn Curtis, Assistant Adjutant General for Musketry, Bo. Army, then pointed out that our system of ammunition supply followed closely on the lines of the German system and that it was not intended to arrange for a supply of ammunition to be distributed in the later stages of the attack but to ensure men going into the thick of the fight with as much as they can carry.

Major-General Blundell, Commanding, Poona District.—Said he thought the system wanting in simplicity, and deprecated introducing a new article of equipment, as suggested, unless of proved necessity. He said that it was impossible to pass a judgment on Colonel Peile's suggestions until he saw their working in the field.

The usual vote of thanks to the lecturer was then carried unanimously.

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Vol. XXIV—1895.

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The Journal
OF THE
United Service Institution of India.

VOL. XXIV.

1895.

No. 119.

THE BREEDING STUDD OF AN INDIAN PRINCE.

BY

COLONEL T. B. TYLER, R.A.

REPRINTED, BY KIND PERMISSION, FROM THE PROCEEDINGS OF THE
ROYAL ARTILLERY INSTITUTION FOR AUGUST 1894.

Bhavnagar, in Khatiawar, is one of the most prosperous and best managed states in India. During the reign of the present Maharajah, public works, conceived and carried out in pursuance of a wise and liberal policy, have been completed, and the plans of more are prepared, and will be begun in due time. Large reservoirs of water, with an ample supply for reserve purposes, have been constructed in the city; there is a spacious hospital, a college, a park of 450 acres—in which will be laid out ornamental lakes with islands to harbour wild fowl; and within the bounds of which antelope, nilghai, and various deer will wander freely—there are avenues of trees, and good roads everywhere. The gem of the city is a tomb to the late Maharani, built of Carrara marble, curiously and beautifully carved by local artists; part of the design being after the famous carved windows at Ahmedabad; and there is some undercutting quite exquisitely wrought. In the building of the hospital and college the Hindoo style of architecture has been followed, the chief characteristics of which are the dome, the cusp, and the flat band; the Hindoos build no arches, they distrust them and justify the suspicion by the proverb "The arch never rests;" meaning, that a power of trust is always exerted.

Some sixty miles from Bhavnagar lies the famous forest of the Gir, through which roam the few lions still existing in Asia. They are carefully preserved, and only one or two have been shot in the last four or five years; the Political Agent told me it was supposed there were about fifty still in existence, and I thought their numbers had not altered during the last twenty years. The reasons they do not increase seem to be that a

good many cubs are captured for menageries, and that some are killed by the owners of the flocks and herds in the country surrounding the forest; for the lion is to the flockmaster a much more unpleasant neighbour than the tiger, who hunts alone and kills only what he requires for food; lions hunt in troops and will often kill a dozen cattle for sport. They breed in caves, and the natives, aware of this habit, light fires at the entrances and smother the inmates. It is interesting to note that lions and tigers inhabited the jungles surrounding Mount Aboo, near Deesa, less than thirty years ago, and though the lions have disappeared there are tigers there still. The tiger seems to possess, in a greater degree than the lion, the capacity to withstand the annihilating effects of the encroachments of civilisation.

The Maharajah possesses a breeding stud with paddocks, sheds and boxes; the brood mares number about 100, and are of all breeds; English, Australian, Arab, New Zealand, and country-bred. Hitherto, the mares have not been selected on any principle, but it is probable that in the future approved mares only will be admitted to the stud. Of stallions there is the English horse "Reputation," imported by Lord William Beresford—probably the best miler of his day; an Australian, several Arabs and country-breds. The stallions, mares and young stock are all in excellent condition, and the youngsters perfectly quiet and tractable. Colonel Humfrey writes:—"In the Bhavnagar stud, where the young stock have every care and kindness lavished on them, the youngsters, though quite unbroken, are so confident and fearless that on a stranger entering the yard they crowd round him in a most inquisitive manner, allowing themselves to be stroked, handled, or led about, in a way that is pleasant to witness, and which speaks volumes for the treatment they receive, and in after life, I have noticed that those who come from these paddocks display the same gentle manners."¹

The object of the Maharajah is to improve the breed of horses throughout his territories; and there are interesting particulars regarding the Khatiawar horse to which, as they may not be generally known, I will briefly refer. For many generations the Khatiawar horse has been much sought after, on account of his speed and endurance; the various chiefs vied with each other in keeping up the distinctive characteristics of the different castes, and until the last twenty years it was no more possible to procure a high-bred "Khatty," out of his own country, than it is to get a true Jersey or Guernsey cow out of the Channel Islands. Owing to facilities of communication by railways, the distinctions are not so sharp as they were, but still the people cling to the

¹"Horse Breeding and Rearing in India." By Major John Humfrey, B.E.S. Staff Corps, F.Z.S. 1887.

old traditions and cherish the old breeds, and you must go to Khatiawar to see them at their best. It is believed that the favourite and prevailing colour is dun, with a dark stripe down the back, but Colonel Humfrey writes:—"My intimate knowledge of the breed leads me to disbelieve the theory. There are not more dun horses in Khatiawar than in any other part of the country." A mark of the breed which is greatly prized is the peculiar pointing of the ears, which arch inwards, so that when pricked the points nearly meet. I have nowhere seen such beautiful heads as those of the high-caste "Khatty" horses; indeed, the model the native breeder takes as his ideal is the form of the antelope. "Where," he says "do you find such swiftness, endurance, and beauty as in the antelope;" when you object to the want of bone in his horse, he replies that the antelope also has small bones; if you remind him that the antelope is not called upon to carry eighteen stone on his back, he scornfully retorts:—"You mount your horse, I will mount mine; we will race, and I shall win." The arrangement of the terms of such a match would present some difficulties, and I am not aware of any record of a satisfactory trial; but I have been told by men well acquainted with the country that if you sent a "Khatty" man on his own horse on an urgent message, for thirty or forty miles across a rough country, it would take a very good Englishman to beat him. The different castes of breeds are jealously observed, as are the traditions regarding them; for instance, in the Pirani Tajan horses, which have the reputed merit of conveying their masters, if wounded in battle, out of action to their homes. In modern warfare, similar conduct on the part of a charger, might lead to misunderstandings with the military authorities.

The Maharajah holds a horse show every year at which the animals bred in his paddocks are exhibited, but for classification only; the prizes, rather over 2000 rupees in value, being taken by the other exhibitors. This year there were about 420 horses entered, an increase of 100 over the entry of last year; all expenses are defrayed by the Durbar, and as may be expected from an idea conceived and carried out on so liberal a scale, the show is becoming very popular. I was asked to act as one of the judges, an office I accepted with a great deal of pleasure; and I may say that the kindness and hospitality which I received while at Bhavnagar, could not have been exceeded.

Mr. Proctor Sims, the State Engineer, is a man of many parts from his designs, and under his supervision, the numerous public works which have sprung into existence during the last twenty years, have been executed; and it is owing to his skilful administration that the Bhavnagar stud has attained its prominent position; it is scarcely necessary, therefore, to state that the arrangements of the show, made by him, left nothing to be desired.

The show was held in the new park, which was gaily decorated with arches and flags, and an immense marquee was pitched as a shelter from the sun; there were a fair number of spectators, and next year, when jumping will be included in the programme, the day will be celebrated as a state holiday. This year a couple of jumps were put in front of the marquee, on the second day of the show, and encouraged by the example of Bhav Singji, the eldest son of the Maharajah, who rode his own two mares—both bred in his father's paddocks—pluckily and well, several of the Imperial Lancers and some natives jumped their horses in good style, mostly riding bare-backed. It was interesting to observe how the incidents usual at a jumping competition—the refusal of a horse, the loss of a turban, the struggle of a rider to maintain his seat—upset the Oriental gravity of the spectators and moved them to mirth, as similar occurrences do lookers-on in western lands. There were a good many animals in the show-yard of an inferior quality, but there were a few of the higher types of Khatiawar horses. Perhaps the best animal in the show (putting aside the horses belonging to the stud) was a dun pony with black points, a model of strength and full of character; I believe he was afterwards bought for the stud. Another notable animal was a beautiful white mare, whomight well have inspired Browning's poem of "Muléy Keh." Indeed, if the "Khatty" mare of the highest castes had been studied by the poets I believe she would have supplanted the Arab as a subject for their songs.

The problem Mr. Proctor Sims has set himself to solve is:—
 "What is the combination of blood which will produce the animal most suitable (1.) To mount the Imperial Lancers, and do the ordinary work of the Durbar. (2.) For sale to the Indian Government."

I would point out that Government, being by far the largest customer for horses, must be first considered by anyone carrying on a breeding establishment. As I have stated, the brood mares belonging to the stud are of all sorts; so there is a fine opportunity for comparing the results arrived at by combining different strains of blood; and it was the opinion of those present at the show, that the best stock were the produce of country-bred mares with two strains of Arab in them, crossed with an English or Australian thorough-bred horse. The Remount Agent of the Bombay Presidency bought three colts of this class; bays, $3\frac{1}{2}$ years old, 14 hands $2\frac{1}{2}$ inches in height, with good bone and action, excellent shoulders, unusual length of rein, of good frame, and true-made all over. They were perfectly tractable, and I have no doubt that at five years old they will be powerful horses, 15 hands high; and being full of quality they should make ideal light cavalry remounts. And as the light cavalry horse is the animal best

suited for private work in this part of India there should be no difficulty in selling any number of them.

A country-bred is thus defined by the West of India Turf Club:—"A country-bred horse is one foaled and reared in India, the country and breeding of the sire and dam being quite immaterial as regards this definition; but the latter must have been in India for 12 months immediately preceding the birth of the foal."

Thus the produce of an English horse, and an English mare who has been a year in the country, would be a country-bred; but the animal I allude to in this paper is one descended, on the dam's side, from the indigenous breeds of the country. Of these indigenous breeds there are, according to Colonel Humfrey, only three:—the Khatiawar, the Deccan and the Sind; "but," he adds, the Punjab has always been noted for its horses." I have no intention of comparing a country-bred with an Australian—a superior animal in every way—nor with the highclass Arab, whose beauty, courage, docility and endurance will always, in spite of his being an execrable hack, maintain him in the position of a public favourite; but it is passing strange that so few horses are bred in India as to make it necessary to import the large numbers of Persians and inferior Arabs which may be found any day in the stables of the dealers at Bombay. For a country-bred is a better horse than an Arab, and according to the rules of the turf clubs has to give him a stone in class races; and though he is not so taking a horse in appearance, he has better shoulders, and is in consequence a better hack; he is a better jumper, equally good at polo, better in harness; he is, however, deficient in the attribute of courage so conspicuous in the Arab. It is sometimes said the country-bred is dangerous and vicious, but Colonel Humfrey denies this accusation: "I have had considerable experience with them, and say with confidence, that as a breed they are especially good-tempered and amenable." I find in the Report of the Army Remount Department, that "the prices now authorised for country-bred horses are higher than for remounts of any other class. This is no doubt right, in view to the promotion of the indigenous supply. . ."¹ But if he is a better horse than the Arab for general purposes, and if Government pay more money for him, why is he so difficult to get? This is a question not easy to answer; there are some reasons, but I cannot say they are sufficient ones. In the first place, if the process of breeding arrived at by the Bhavnagar stud is the correct one, it takes a long time to breed the mare which will produce the best sort of colt, and there are few such

¹ Annual Administration Report of the Bengal, Madras and Bombay Presidencies, 1892-3.

mares in the country as yet. Then, whatever was the case in former times,² India is not a horse-breeding country, in the sense that parts of England, Ireland and Australia are ; there are no enclosed and watered paddocks or fields, as in England and Ireland, or extensive grass runs as in Australia. There are plains, it is true, but no herbage fit for horses grows on them ; and whatever land is of any value is under cultivation. The flocks of cattle, sheep and goats are tended by herdsmen, who keep them out of the crops, but it is obvious that a drove of colts could not be "rounded up" by such slow-moving guardians. Therefore, horses kept for breeding purposes must be confined in the villages and stall-fed ; an expensive method of rearing, and one that can only be practised on a very small scale. In the Report of the Remount Department it is stated that in a certain district of Bengal "the Remount Agent estimates having inspected 1200 horses, all were in excellent condition but were tied up in villages, and deprived of any liberty whatever." Such a system of rearing is not only expensive, but bad ; loss of liberty prevents development of bone and limb, and is a certain cause of deficient and faulty action. It is also said that breeding is discouraged by the importers of other breeds, especially the Arab dealers of Bombay who, aware that the country-bred is a better horse than their own and fearing to lose a part of their lucrative trade, use their influence to prevent his being allowed to compete with Arabs in the races in Western India. Such influence, if it exists, can scarcely be very strong, for I observe that in the prospectus of the Poonah Races, out of twenty-six races, fifteen are open to country-breds. Then, of course, the chiefs no longer maintain the immense armies which existed at the beginning of the century, and I suppose this must be the main reason for the almost incredible decrease in the number of horses bred now as compared with the state of affairs ninety years ago.

Since the discontinuance of breeding studs, the Indian Government have instituted a system of "nurseries," in which a certain number of young stock are kept in paddocks and issued to the services at four years old. They are bought at any age under four, but for the most part between two and three years old. I find

2.—At the out-break of the Mahratta war, in 1802, "the armies of Doulut Rao Sindia and Rughojee Bouslag were estimated at about 100,000 men, of whom about 50,000 were horse." At the battle of Assaye, in 1803, the Mahratta army "amounted to upwards of 50,000 men, of whom more than 30,000 were horse." When Holkar attacked Delhi, in 1804, during the campaign which ended in the siege of Bhurtpore, "he was at the head of 60,000 horse, 15,000 infantry and artillery, with 192 guns." At the battle of Kirkee, in 1817, the Mahrattas had 23,000 horse.—"History of the Mahrattas," by James Grant Duff.

from the Remount Report that the numbers in possession in March, 1893, were :—

Hapur	881
Kurnal	554
Ahmednagar	182

Total 1617

But as the following table shows even this modest number is not easily kept up :—

	Sanctioned Number.	Purchased.
Hapur	375	437
Kurnal	375	154
Ahmednagar	100	47
Total.....	850	638

The system is an excellent one, and the Government is so thoroughly in earnest in the matter that the nurseries will doubtless be enlarged as soon as a greater number of young stock can be secured.

The most significant portions of the Report of the Army Remount Department are the references to the experiment of introducing the Norfolk trotter into India, with a view of obtaining a stronger class of remount. The Director, Army Remount Department writes :—"The Norfolk trotter strain has doubtless done much good in producing power and substance. But many of the stallions of this class were doubtless introduced with a view to producing remounts fit for the artillery in India. Judging from past experience, I do not see much chance of this hope being realised, and meanwhile the class of horse produced for the cavalry suffers from the shortness of neck and heaviness of shoulder of the strain referred to. I think the Arab and thorough-bred English stallions produce the best remounts to be seen at the depôts, and that it would be well to steadily increase the sires of this class. . . ."

I would strongly recommend that the agency for purchasing stallions be given a free hand in this matter, so that, if necessary, the purchase of Norfolk trotters may be curtailed. . . ." And again :—"The horses obtained therein (the Punjab districts) are wiry, compact and good, and compare very favourably with those produced in the North-Western Provinces, but they would be all the better for less of the Norfolk trotter strain, which is always remarkable for short necks and heavy shoulders." I have taken some trouble to find out the opinion of the army in general on this point, and my correspondents are unanimous in condemning the indiscriminate use of the Norfolk trotter stallion ; and there is little doubt but that the Government of India will listen to the remonstrances of its responsible officers, and stop the importation

of the class. No great harm has been done yet, and that the experiment has not been entirely successful is from no fault on the part of the Government, who have used every endeavour to improve the country-bred horse.

The Hackney class is not a large one, and so fashionable has it become, that almost all the colts are offered for sale entire. In the report of the last Hackney show in *The Field* the following remarks occur:—"The Hackney Horse Society has this year instituted classes for geldings. . . . truth compels one to say that they are a sorry lot. . . . the proportion of stud horses of the Hackney breed is, beyond all question, far in excess of all requirements, and if three-quarters the number were 'added to the list' to-morrow, no great harm would be done." When it is considered that the best stud horses are kept at home, and that the Continental buyers, America and Australia, eagerly compete for the next best, there is much reason to fear that most of those purchased by others, are among the lot condemned by *The Field* as useless for breeding purposes. And a trotter stallion of the second class is but a moderate animal, while one of a lower degree is generally a bad one.

I would strongly advise any persons breeding in India, to follow the example of the Bhavnagar stud rather than embark on the experiment of trying the trotting horse. No doubt, if they could secure the services of "Danegelt" or "Gannymede" or Hackneys of the very first class, the result would do good, but as that is impossible, they had much better use English and Arab sires. And though I do not think that country-breds will ever be produced of sufficient weight and strength for artillery or heavy cavalry, I believe, that for all general purposes—military and civil—they will be found, not only suitable, but superior to every other breed.

I do not think that in the Bombay Presidency at any rate, it is understood what kind of mare produces the animal best adapted for the services, nor with what sire she should be crossed. Now, though it is not to be expected that breeders will not exercise their own discretion in the matter of breeding, I think many would be glad if the experience gained could be from time to time, circulated for information. There seems to be now no officer able to give authentic information as to the results arrived at. I observe, in the Report on the Army Remounts, that the Director expresses a strong opinion that clear instructions should be given to officers of the Department on general matters connected with it "on account of their limited tenure of appointment;" it seems to me that in these instructions might be included a *précis* of the knowledge and experience stored in the Government records of horsebreeding, for the benefit of breeders and others anxious for information. It may be answered that this is

the business of the Civil Veterinary Department; in my opinion, it is the business of everyone who is responsible for, or interested in, the supply of horses in India.

Note—There are, in addition to the native regiments, three regiments of British Cavalry, mounted on Arabs and country-breds; of these I have only seen the 7th Hussars, whose horses consist of 367 Persians, 46 Country-breds, 98 Arabs, and 21 of other breeds; the Persians are considered the best, next in estimation are the country-breds, and the Arabs are last in the order of merit. But I saw no country-breds of the class of those bred at the Bhavnagar stud.

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I would strongly advise any persons to follow the example of the Bhavnagar stud rather than the experiment of trying the trotting horse. No one can secure the services of "Danegelt" or "Gannym" in the very first class, the result would do good, but they had much better use English and Arab sires. They do not think that country-breds will ever be of great weight and strength for artillery or heavy cavalry for all general purposes—military and civil—not only suitable, but superior to every other.

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NOTES ON CAVALRY.

BY CAPTAIN H. L. ROBERTS, 1ST BENGAL CAVALRY.

1. A point in the working of advanced guards, and in reconnoitring duties generally that has probably struck a great number of those chiefly interested in the cavalry arm, is that patrols seldom take full advantage of the ground they are working over to help them in their work. Though the following remarks refer as much to a reconnaissance, it will be better for the sake of simplicity to confine them to the duties of an advanced guard.

Advanced guards.

The different parts of the advanced guard, having taken up their respective positions, at present advance invariably at the same pace as the main body, going as slowly over low lying open ground, which they have been already able to examine from higher ground as they do through cramped and enclosed country which they have to search as they go. We are certainly taught to send on from a patrol a sufficient number of men to search a village, or other cover capable of concealing an enemy, so as not to check the pace of the main body; but this does not seem sufficient. A very preferable method is for each patrol to press on to any rising ground or point of vantage in its front, and to halt then and examine carefully all the open ground in its front. When the main body approaches to its normal distance the patrol presses on at an increased pace over the ground thus examined to the next suitable place, when it halts again and proceeds as before. This system is carried out in the French Army where it has the name of "*bonds successifs*." It is by no means essential that the patrols should move on a general alignment, so long as the ground between each is properly searched, and this proper use of the ground would it is believed lessen the work and the fatigue both of men and horses, and keep the former more on the alert.

In the event of a patrol observing from its position that the low ground before it gives possible cover to an enemy, it would detach a sufficient number of men to search the locality, leaving always at least one man to watch its own movements, who would be able to give early information of any attack on it. This search could be carried out without causing any check to the advance generally.

In the level plains of India the system proposed could be followed—the cover afforded by the villages, clumps of trees etc, being made use of by patrols as the point of observation of the country in front and as the starting point for its next rapid advance.

To obviate any chance of the patrol wandering too far to a flank or losing the main body, which might occur from its not being in sight for considerable periods, it would be advisable to lay down a general route, or line of advance for each patrol, as is done in reconnaissance. The times at which the main body means to halt, the time at which it will again advance should also be intimated to each patrol, which would conform by halting in the most suitable and commanding position at about the same time.

2. The following method is proposed to ensure the safe arrival of reports from advanced squadrons to the commanding officer in a reconnaissance.

At present the delay, caused by orderlies hunting for the support—where the commanding officer generally is—and the consequent uselessness of the report he brings, is proverbial.

The Commanding Officer seldom leaves the support, and the support generally follows the centre advanced squadron—at any rate its route is always known.—and it will only leave this route to drive back a threatened attack or check to the advance at any point in the line.

Let the support throw out one group as connecting files between itself and the centre of the line of advanced squadrons—these files, riding at distances of from 800 to 400 yards apart according as the support is $2\frac{1}{2}$ to 1 mile in rear of the advanced squadrons, give a regular line along which all reports could be sent. The right and left advanced squadrons send their reports to the centre of the line, when the orderly hits off the first connecting file and rides straight towards the next connecting file and so on till he reaches the support—his route being plainly marked by the different connecting files. Of course by this method he has to go two sides of a triangle instead of one if he rode straight from his advanced squadron to the support, but it is thought that this is more than counterbalanced by the certainty of his report arriving in time that can be accurately estimated. Reports of an unimportant nature can be handed to the leading connecting file and passed from one to the other of them to its destination.

Now when the support has to move to a flank or elsewhere to repel an attack, the connecting files move in a corresponding manner keeping always between the centre advanced squadron and the support. The accompanying plate makes this clear.

The few men lost to the support if called on to charge are of less importance than the certainty of reports not being lost or delayed.

The above method is by no means perfect—but it is believed to be preferable to the present indiscriminate method of sending orderlies flying about the country, giving them the names of villages which they don't know and directions which they don't understand, to guide them.

As regards lateral communication between the advanced squadrons—between the Head Quarters not the patrols of these squadrons that is,—the very same objections apply to the existing system by which an orderly on being given a message from, say the right advanced squadron to the centre advanced squadron is generally told—“Ride to that village A, in that direction. You will find the centre advanced squadron there.” Off goes the orderly in the required direction—having very likely heard the name of the village very imperfectly. He has to turn out of the direct line to cross a stream at a ford, to get over bad ground, or for many other reasons, or he may unconsciously deviate from his direct route. He begins to look about and sees a village near and thinks this must be the one he is to reach—he rides up to it and finds it is B—he again asks his direction and is given a vague idea of the position of A if he has remembered the name correctly. He may visit half a dozen villages in this way before he reaches A—he may be lucky enough to find it sooner, when he arrives the squadron may have gone on ahead, or it may not have been there at all having gone off towards the right or left for some reason. If he does find the squadron he will probably have gone two or three times the distance that really lay between the two advanced squadrons.

This is no exaggerated case. Every one must recall numerous instances of it. To remedy this the Squadron Commander should send his message to his flank patrol nearest the centre advanced squadron. He knows the direction and pretty nearly the position of this patrol, at any rate he is in frequent communication with it. This patrol is in touch with the nearest patrol of the centre advanced squadron—and this last patrol is also in communication with the Head Quarters of its Squadron. This then should be the route of the orderly—first to his own inner flank patrol—then the nearest patrol of the centre squadron, then the centre advanced squadron itself.

The advantages and disadvantages of this are the same as those of the method proposed for communication between advanced squadrons and the support.

3. All cavalry officers must have read Lient Colonel Neville's

Conduct of the Rear article on Cavalry Formations in No. 116 of Rank in Action.—this journal, with interest and appreciation.

I would however venture to criticise one point, regarding the rear rank taking increased distance during the attack. Colonel Neville suggests that on the “charge” sounding the rear rank should ckeck its pace to 15 miles an hour, and from this slow down to a canter with the object of their being, at the moment of collision, 40 to 50 yards is rear of the front rank, collected and in good order. Now when one remembers that from the commencement of the “gallop” till the “charge” is sounded, the

pace has been gradually "boiled up" to the highest speed consistent with good order, that every man is wild with excitement, that in the rear rank are often hard-mouthed and pulling horses also wildly excited, that the smartest men as a rule are in the front rank and the less efficient in the rear rank, can one believe that the rear rank will check its pace and come up in good order—and even if it did would it be as much as 40 yards behind the front rank when the latter meets the enemy. The charge will be sounded when the opposing cavalry is about 150 yards off—consequently it only covers some 75 yards—time about 7 seconds. At the regulation gallop in 7 seconds the rear rank will have covered 35 yards—but it will not, as a matter of fact, be able to check to this pace at once and one cannot expect it to have covered less than 50 yards when the front rank and the enemy meet, and this will not be more than 25 yards behind it—all too close for the purposes for which it is required.

One other point is that instead of the serrefile leading the rear rank, it would be quicker and more simple for the rear rank centre guide. Why should not the rear rank check its pace on the commanding officer giving the caution, "The Line will attack" at say 200 yards from the place where the two lines will meet. Then the leader of the rear rank will have time to get into his place and steady his men, and the rear rank can follow the front rank at such distance as the moment seems to require; above all they would be much more in hand and be available for the attacks on flank and rear suggested by Colonel Neville. These flank attacks will require exceptionally good leaders to be of full benefit and this point will require careful attention. In the event of the rear rank acting as I propose, they could not of course fill any gaps in the front rank, but in the last 200 yards of an attack, such gaps as they could fill if closer up would be few if any.

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THE TRAINING OF RAILWAY VOLUNTEER CORPS.

BY CAPTAIN E. H. F. FINK, EAST LANCASHIRE REGIMENT,
ADJUTANT N. W. R. V. RIFLES.

During my work as Adjutant of the N. W. R. Rifles it has often struck me that the syllabus of training laid down for Volunteer Rifles might with advantage be altered considerably as regards the Railway Corps, and be made to suit more closely their requirements, and increase their value. At present all Infantry Corps have the same training which may be said to aim at making them as serviceable as Battalions as time and circumstances will allow. At the Annual Inspection the Corps is collected and formed into a Battalion, if numbers will allow of it, and as such it marches past, manœuvres, attacks, defends, or places outposts. Considering all things, the Railway Corps generally acquit themselves wonderfully well, owing mainly to the following among other reasons :—

- 1 The men are “compulsories” and not “volunteers” and so can be made to attend parades, and are moreover under good discipline.
- 2 The officers are selected, and not elected, which results in all ranks finding as their superiors on parade those who are their superiors in Railway life, so that the officers know their men and have authority over them, while the latter are careful not to forfeit by remissness at drill, the good opinion of those who control so largely their advancement and future.
- 3 The large capitation grant earned every year allows of the men being well clothed and liberally treated, which will always tend towards efficiency.

It will then be readily understood that, could the Railway Corps be mobilised, they would in the course of a few weeks' training develop into Battalions that would prove of great service in the event of disturbance. But unfortunately in any war scare or internal commotion this would be the very last thing they could do, except perhaps those situated in parts the most remote from the scene of operations or the line of communications.

Railways, almost all over the country, would be strained to the utmost in conveying troops and war material, which would keep every single employé of each department hard at work. The Railway Volunteers could, then, never be employed as Battalions, or in even smaller units to protect the European community or

maintain order. Their rôle would be to keep open communications by means of the railway, and protect the stations, rolling stock and workshops, while carrying on as far as possible their daily occupation. A Company would be the largest unit that could ever be collected, and this only for service at its own Head Quarters, and in the precincts of the railway. It seems to me, therefore, that the present syllabus might with great advantage be made to apply only to Non-Railway Corps, and a new one devised specially for the Railway Corps, and more in accordance with the work they would be called on to perform when called out for service.

I think this could easily be done without involving extra expense, or any difficulties in execution, provided the railway authorities gave their support, and offered every facility in the way of allowing the use of old material, and arranging so that the men of all departments might be off duty at the times detailed for instruction.

The following would seem to embrace every thing needful to be taught:—

MUSKETRY	{	Firing exercise and aiming drill.
		Individual and Volley Firing up to 600 yards.
		Fire control.
DRILL	{	Squad Drill, (chiefly for recruits).
		Company Drill (simple movements in fours and forming.)
		Arm Drill (sufficient for handling arms at drill) Extending and closing.

Defence of posts.

Hasty fortification, and use of railway material in defence.

Armouring of trains, and their use.

A simple system of sentries and reconnaissance.

Signalling.

I would do away with battalion and all ceremonial drill, and have the squad, company, and arm drill more as a preliminary to the rest, which should be the most thoroughly taught. The aim should be to ensure the corps being efficient in all that pertains to preparing and defending small posts, rather than in executing parade movements and field manœuvres with accuracy. Men of the Locomotive Department only need learn armouring of trains, and only a few selected men signalling, but the remainder of the course would be undergone by all. The Locomotive Department would be asked to provide spare or old rolling stock, boiler plates etc. in each workshop, for use in teaching the men how to armour a train, and the Engineering Department old rails, sleepers, and other plant, with picks, shovels and other tools, for the practice of hasty defences, and there is every reason to believe they would readily respond and help to the best of their ability in allowing their men

to be trained in work that would appeal to them as being practical and suitable. The signallers should be scattered over the line as far as possible and not all resident in a few stations. Such a course of training would be, I cannot but think, not only far more suited to the real uses to which railway employes would be put in time of trouble, but more agreeable and interesting to the men themselves than the present monotonous course of ordinary parade drill; and it would also probably excite the sympathies and assistance of the railway authorities more completely.

At each station where members of the corps resided instruction would be carried on by the Adjutant and Sergeant Instructors, plans for the defence of each place would be drawn up and practised, and where practical work to any extent is impossible much could be done by lectures and by the measures to be taken being explained on the ground.

It must be remembered that in any crisis there would always be a large amount of skilled native labour available, such as the artisans in the shops, and the permanent way gangs. These men would probably never desert the railway, to which they look for their livelihood, no matter how many of their countrymen rose against us, and by their means even the less important stations, where there are but few Europeans, could be put into readiness for defence in a short time.

The Adjutant might with advantage be a Royal Engineer Officer, with a liking for drill and musketry, or at any rate an Infantry Officer with special qualifications in fortification, and the Sergeant Instructors should be sent to attend the fortification lectures at a Garrison class and be examined in the subject at the end of the class, or taught in some such way the necessary details of hasty defences and simple fortification.

To carry out this course thoroughly, the Adjutants of the big railway corps would probably have more work than they could get through, as with the present system of training their time is very fully taken up all through the cold weather, but this might be remedied without expense by appointing Officers as Assistants during the cold weather, in a similar way as Assistants are given to the District Recruiting Officers.

The Annual Inspections would of course be of a character to suit this course, and might with advantage be carried out at as many stations along the line as possible. The system of collecting the members of as many Companies as possible at the Head Quarters Station for training and Inspection could then with advantage be put an end to, and so a considerable sum of money spent in these Camps of Exercise annually, saved to both the State and corps concerned.

With a course of training such as I have roughly sketched

above, Government would be able to utilise for military purposes the knowledge possessed by the many skilled artisans and craftsmen, who are already in the ranks of Railway Volunteer Corps, which is at present entirely lost, and I venture to think that by so doing the State would get more in return for the large capitation grants annually paid out to the Railway Corps than has been the case hitherto, while the men themselves would be more than satisfied with the change in their method of training.

ROUGH SCHEME FOR THE FORMATION OF A RESERVE OF VETERAN BATTALIONS WITH A VIEW TO THE IMPROVEMENT OF THE FIGHTING EFFICIENCY OF THE NATIVE ARMY IN INDIA.

BY CAPTAIN E. H. RODWELL, 2ND PUNJAB INFANTRY.

Introduction.

In submitting to the readers of this journal a scheme for the improvement of the efficiency of the Native Army in India by the formation of veteran battalions, the author does not pretend to assert that the time is ripe for the practical adoption of such a measure. The safeguarding of our Indian Empire is, we may confidently trust, in able hands. The problem involved is a most intricate one and the present scheme touches only a minor factor in its solution.

If there be ought of good in it the same may in due time spring up and bear fruit, and if not, its perusal may at least suggest matter for consideration. One point may, however, be specially emphasised by way of introduction—to wit, the vast and rapid change that is declaring itself in the empire of which the English in India form the main support. With the means of communication between distant provinces increased a hundredfold and still increasing,—with education within reach of the meanest of the people,—with the gradual disintegration of old forms of belief,—with the new and vast power of the press acting on a population more than usually plastic—with potential enemies on our frontiers ready to take advantage of any weakness—with these and other unspecified forces at work one cannot but be reminded in some degree of the seething and bubbling that prefaced the great European eruption at the end of the last century. While thus we may acknowledge that vast energies may underlie the visible fermentation it must be our care to control them and divert them from dangerous into beneficent channels—to create a cosmos from a possible chaos ; and among the various forms of power over the masses that we hold, our native soldiery may be said to rank as one of the chiefest. Much has been done to improve the Native Army and many schemes have been framed to give greater efficiency *without greater cost*.

The present scheme, however, differs from most others in that it is assumed as a fundamental axiom that India is worth keeping and that on account of the various forces at work the time will come when we shall be forced, however unwillingly, to

pay as national insurance increased premia in consequence of increased value and greater risk. One form of expenditure will almost certainly be that on the Native Army—to bind the peasant soldier closer to our interests and to utilize his services more thoroughly; such also is the object of the scheme now brought forward and while no finality is claimed for it, the author believes that for a very moderate expenditure it would secure very great value.

The Scheme.

Postulates.

Let it be granted that :—

I The present number of battalions is insufficient for entrance on a great war.

Note.—Waste in war is very great. At least 50 % of fighting material of *all* ranks would be required to feed our field army, and our present system unless expanded would assuredly break down under the strain.

II The formation of the reserve, as at present constituted either into depot battalions, or as drafts to feed the fighting line presents great difficulties, because in either case the Regimental Staff of Officers and Non-Commissioned Officers would have to be improvised.

Note.—This could be done at the expense of efficiency. For if in the case of dépôt battalions the regimental staff, were formed from the group-battalions, some of the best material of these battalions would be lost to them when most required. If the regimental staff is to be improvised from the reserve itself, it is to be remembered that a long period of reserve service with only one month's annual training is not conducive to efficiency and the preservation of the power of command. Again, waste will take place among the Native Officers and Non-Commissioned Officers of a battalion on service to a *greater degree* than among the rank and file and a point would in many battalions soon be reached when no more really suitable promotions could be found. Hence the necessity of providing a reserve of *all* ranks.

III The eve of a great war is the worst time to formulate and try a new organisation. This should be done in peace time.

IV As a consequence of the high standard of efficiency now demanded from the sepoy more European Officers are required in each group-battalion.

General Idea.

I The main idea is a modification of the principle on which the old Sikh army was organised (*i.e.* on a system of short annual trainings during the

Idea.

agricultural slack season) and of the present reserve system.

II. The present reserve system is not interfered with because that system might suit some men better than the one now proposed. The reserve too, might be used to feed either the group-battalion or the veteran-battalion with *raw* material; The *rawness* being dependent on the time since the reservist left the group-battalion.

Veteran battalions to be formed of *Cohorts from the the group-battalions. Each Cohort to consist of 3 or 4 companies, say 4 companies.

Each company to be of 100 men with usual proportion of Native Officers and Non-Commissioned Officers.

Thus, from a 3-battalion group we would have a veteran battalion in 3 cohorts, say 1200 men.

The Veteran battalion to be embodied for 3 months annually under canvas at the group centre.

While the scheme is still tentative the camp equipage to be supplied from the group battalions.

Transfer of sepoy to the veteran battalion (or rather cohort) to be permitted after 6 years service with the colors. Approved Native Officers and Non-Commissioned Officers to be transferred or promoted into the battalion.

Each cohort would thus be a miniature of its own group battalion.

Pay *Pay and Emoluments.*

I—When embodied.

Travelling expenses, free rations and free kit (khaki) to all ranks.

Pay—Sepoy Rs. 8, Naik Rs. 12, Havildar Rs. 14, Jemadar Rs. 40 and Subadar Rs. 80.

II—When disembodied.

Pay.—half the above.

British Staff.

Per battalion of 3 cohorts.

British Staff.

1 Commandant	} <i>i.e.</i> 2 Officers from each group-battalion.
3 Cohort Commanders.	
1 Adjutant.	
1 Quarter Master.	

The Commandant to be 2nd in Command of one of the group battalions.

* For want of a better word. A Battalion can have but two wings.

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The other officers to be Wing Officers of the group battalions.
A ninth (Wing) Officer to be added to the establishment of each group-battalion.

Staff pay of British Officers.

Commandant	...	... Rs.	600
Cohort Commanders, each	...	"	230
Adjutant and Quarter Master each	...	"	200

The appointments held by officers in group-battalions would be filled by temporary appointments, the full staff pay being available.

Cost.

The prime cost per cohort of 456 men of native rank would be :—

400 Sepoys	× 8 × 3	}	...	... Rs. 24,000
400 "	× 4 × 9			
8 Buglers	× 8 × 3	}	...	... " 480
8 "	× 4 × 9			
20 Naiks	× 12 × 3	}	...	... " 1,800
20 Naiks	× 6 × 9			
20 Havildars	× 14 × 3	}	...	... " 2,100
20 "	× 7 × 9			
4 Jemadars	× 40 × 3	}	...	... " 1,200
4 "	× 20 × 9			
4 Subadars	× 80 × 3	}	...	... " 2,400
4 "	× 40 × 9			

Rations at *3-4-0 for 456 men for 3 months " 4,446

* This is Rs. 3-8-0 less
Bunniah's Commission
0-3-6, less saving in
wholesale dealing 0-0-6
total 3-8-0, less 0-4-0
=Rs. 3-4-0.

Travelling, say 50 miles
by road and 100 miles by
rail each way, say 10
annas × 4 + Rs. 1 = Rs. 3-8
for 456 men ...

" 1,596

Proportion of staff pay of British Officers

" 1,690

§ The services of this
Wing Officer would be
available for the group
battalion for 9 months
out of the 12.

Staff Corps pay of one
Wing Officer, 12 months §

" 2,700

Total ... Rs. 42,412

Comparison of Cost.

This compares with the cost of 456 men in a group battalion, thus :—

†408 × 9 × 12	...	...	Rs. 44,064
+ 8 Buglers.			
20 Naiks @ 13 (G.C.P. @ 1)			
20 × 13 × 12	...	...	„ 3,120
20 Havildars @ 16, (G.C.P. @ 2)			
20 × 16 × 12	...	...	„ 3,840
4 Jemadars @ 40, 4 × 40 × 12	...	...	„ 1,920
4 Subadars @ 80, 4 × 80 × 12	...	...	„ 3,840
Proportion of pay of British Officers	...	...	„ 28,296
Travelling 15 % = 68 @ 3-8	...	...	„ 238

*Compensation :—

* Difference between Compensation for dear-ness of food, drawn for sepoy and that paid by him for food is about Rs 1, but is not suscep- tible of actual check.	456 × 12	Rs. ... 5,472	
	Less 15 % on furlough } = 68 × 7 = 476		566
	Less 10 % on leave } = 45 × 2 = 90		
Cost of cloth uniform	...	...	„ 1,482

Total ... Rs. 91,706

Besides the above there is a considerable expenditure on establishments for 12 months, as compared with 3 months for a veteran battalion.

We thus see that the expense of a cohort would compare very favourably with that incurred by the same strength in a regular line battalion. The pay of the veteran would compare with that of the sepoy of the group battalion and the reservist thus :—

Sepoy @ G. C. P. Rs. 2 + compensation Rs. 1

=Rs. 10 × 12 Rs. 120

* Rs. 3-4 rations.	Veteran @ Rs. *11-4 × 3 } 4-0 × 9 }	69-12
§ Compensation Rs. 1.	Reservist Rs. § 10-0 × 1 } 3-0 × 11 }	43

On field service the veteran and the sepoy both alike would draw free rations. Hence the veteran would draw less than a sepoy with Rs. 2 G. C. P. This might require modification.

It is to be noted that the veteran would pocket Rs. 24 clear for each training and this would undoubtedly make trainings popular.

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The proportion of men and officers in a veteran battalion is compared with those in a Russian Line Battalion thus:—

Russian Line Battalion.	Russian Line Battalion.
22 Officers	22 Officers
51 N. C. Os.	51 N. C. Os.
835 Men	835 Men

DISADVANTAGES.

i.—The average age of the men found to be formed for these battalions is 36 years. If we assume the average age on enlistment to be 20 years, the average age of the veteran battalion would be 28 years. It would probably be found best to have the average age of the men in the reserve battalions to be 28 years, i.e., to 36 years. The men in the reserve battalions would be volunteering and the men in the reserve battalions would be volunteering. The veteran might then pass on to the reserve battalions after 8 years of service. The men in the reserve battalions might be found advisable to have the average age of the men in the reserve battalions to be 28 years, i.e., to 36 years. In this case the veteran battalion would be more than the young battalion to meet the requirements.

ii.—To be trained in musketry, extended to the service of the British Officers will be the link between the present and the past.

ADVANTAGES.

i.—No sweeping change is involved, but the proposed scheme is naturally as a supplement to our system of linked battalions and regimental centres.

ii.—While it is peculiarly adapted to class regiments all members of which would find the same season of the year convenient for training, it is also suitable for any battalion most of the members of which come from the same recruiting district.

iii.—At comparatively little cost we get a large body of experienced and seasoned troops, namely from 54 battalions of the Regular Army, excluding Gurkhas 21,614 men, and 54 additional Wing Officers whose services would be available for the young battalions during 9 months of the year, at a cost of Rs. 22,00,000 or roughly Rs. 100 per man. This statement merely shows the cost and is not intended to imply that the scheme should be applied to the whole army at one and the same time. On the contrary it would be safer to try it with a few selected battalions at first.

IV.—The veteran battalions would be available at any time for field service or simply to relieve the group battalions and garrison the country. Without the addition of any British Officers they would be quite fit to meet any Asiatic foe. With the addition of a few British Officers they would be fit to meet any army in the world.

V.—The system is one that will recommend itself to an army recruited from an agricultural population. It will also most certainly tend to bind that population more firmly to our interest, the pay being good and the service not irksome.

VI.—It combines tactical efficiency with administrative convenience.

Note.—As regards tactical efficiency it will be instructive to compare the number of days in the year available for the drill and instruction of the ordinary sepoy with the number of similar days available for the proposed veteran during his 3 months training.

Taking furlough and leave together we may fairly assume that each sepoy gets 60 days leave in the year. We may also assume that he is on duty including escorts and commands at least every 5th day. From the calendar for 1893 it appears that there were in that year 44 *general holidays* not including Sundays.

Hence we get :—

Days off parade :—

General holidays	...	...	...	44.
Sundays and Thursdays, during 10 months,				86.
On duty during 10 months	...	...		61.
Leave and furlough	...	...		60,

Total of days off parade ... 251.

Making no allowance for sickness and inclement weather, marching in relief &c, this gives as available for drill and instruction only 114 days in the year. A result that is perhaps a little surprising.

The proposed veteran would, on the other hand, have 35 days off parade during his training of 90 days, supposing that Thursday be observed as a holiday as well as Sunday and that duty is at the rate of about 10 nights in bed.

Hence it appears that the veteran would have about 55 days for drill and instruction to the ordinary sepoy's 114, and when we consider that none of his time would be taken up with battalion exercise, ceremonial or field days, we may perhaps admit that a very satisfactory state of efficiency would be attainable in his special exercises.

VII. It will give greater scope and responsibility to the Native Officer who is now too much dwarfed by the British Officer.

The proportion of men and officers in a veteran battalion (2 ||cohorts) would compare with those in a Russian line battalion thus :—

|| For sake of comparison.

Veteran battalion, (2 cohorts only).		Russian Line Battalion.
4 B. Os.	}	22 Officers.
16 N. Os.		
80 N. C. Os.		
¶ 16 Men	...	80 N. C. Os.
¶ 16 Buglers.	...	808 Men.

MISCELLANEOUS.

Cooking utensils.—A chanda fund to be formed for these.

Age and service.—If we assume the average age on enlistment of recruits to be 18 years, then the veteran battalion would have men from 24 years of age. It would probably be found best to limit service in these battalions to 12 years, *i. e.*, to 36 years of age, dependent on the yearly contingent volunteering and the average shrinkage from deaths, &c. The veteran might then pass to the reserve with pension after 25 years total service.

British Cadres.—On mobilization it might be found advisable to fill up the cadres to $1\frac{1}{2}$ British Officers per 100 men as at present proposed for the group battalions. In this case the veteran battalion would probably be more fit than the group battalion to meet a European foe.

Drill and Instruction.—To be confined to musketry, extended order and the service of security. The British Officers will form the link between the present and the past.

ADVANTAGES.

I.—No sweeping change is involved, but the proposed scheme follows naturally as a supplement to our system of linked battalions and regimental centres.

II.—While it is peculiarly adapted to *class* regiments all members of which would find the *same season* of the year convenient for training, it is also suitable for any battalion most of the members of which come from the same recruiting district.

III.—At comparatively little cost we get a large body of *well trained* and seasoned troops, namely from 54 battalions of the Bengal Army, excluding Gurkhas 24,624 men, and 54 additional Wing Officers whose services would be available for the group battalions during 9 months of the year, at a cost of Rs. 22,90,248 or roughly Rs. 100 per man. This statement merely shows the cost and is not intended to imply that the scheme should be applied to the whole army at one and the same time. On the contrary it would be safer to try it with a few selected battalions at first.

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Hence it appears that the veteran would have about 55 days for drill and instruction to the ordinary sepoy's 114, and when we consider that none of his time would be taken up with battalion exercise, ceremonial or field days, we may perhaps admit that a very satisfactory state of efficiency would be attainable in his special exercises.

VII. It will give greater scope and responsibility to the Native Officer who is now too much dwarfed by the British Officer.

**A SCHEME FOR THE REORGANIZATION OF THE
FIELD TROOPS OF THE BRITISH AND INDIAN
ARMIES IN COMPLIANCE WITH IMPERIAL
REQUIREMENTS.**

BY W. S.

PART I.

The author feels that an apology is due for presenting this subject for the consideration of the readers of this Journal, for dealing with a matter he is scarcely qualified to treat, and for presenting his ideas in the form of specific suggestion. With regard to the former count, he would urge that his ideas are the outcome of the perusal of such literature, as comes in the way of ordinary mortals, they are such as the average officer is likely to conceive under such circumstances, and they are advanced in the hope that others, of greater knowledge and higher qualifications will come forward and put him, and others like him, in the way of a right understanding. As for making specific suggestions, the author would point out that no writer, on the subject of army reorganization, has done more than theorize; specific schemes at once illustrate more clearly the writer's ideas and show how far those ideas are practical. Condemnation of things existing is, apparently, general, but, the conclusions arrived at are very conflicting; the opinion of two of the greatest, if not the two greatest living authorities being almost as opposed as it is possible for them to be. This divergence of opinion is however mainly upon the question of long *versus* short service, between the requirements of India and the Colonies and the needs of England. We require, in the first place, two armies, the one present in the British Islands and the other to garrison and protect our Indian and Colonial possessions; as the latter is separated from those resources the former finds in its reserves, and must, consequently, be, for a time at all events, self-supporting, it requires a certain proportion of old and seasoned soldiers always present in its ranks, while the needs of the former are, practically, identical with those of the great continental powers of Europe, which are short color

service and big reserves. These two armies must, however, be combined in one military system in such a manner as to enable the full fighting strength of the Empire to be put forth as a coherent whole, which entails the deployment of these two armies side by side.

Enlistment.

When the present short service recruiting regulations were framed, it must have been taken for granted that recruits of 20 years of age and upwards would be forthcoming in such numbers as might be required. It is, however, a fact that of recruits enlisted 70 per cent are under 20 and their average age cannot much exceed 18. Considering then that the average soldier enlists at 18, engaging to serve with the colors for 7 or 8 years, and is not allowed to be sent abroad till 20 years of age, he can only be kept abroad for 5 or 6 years and until he is five or six and twenty. Perhaps the ten most valuable years of a man's life lie between the ages of 25 and 35; under existing circumstances, the average soldier passes the first half of this period in the reserve and is completely lost to the service for the rest. "On economical grounds it is desirable that men should not arrive in India till their physical development is complete and they should remain as long as they retain their efficiency. The cost of transporting men to all parts of the world and back again is excessive and for this reason alone, independently of any question of expediency or convenience we must adopt a period of service in the ranks which will allow of a considerable residence abroad." (1)

The terms of enlistment, therefore, should require the soldier to put in a certain total number of years of effective active and reserve service, of which he should be *liable* to be retained with the colors for such an outside limit of time as would repay the cost of his transport to and from foreign stations, passing into the reserve for the rest of his engagement. For instance our recruiting regulations might require the soldier to serve 10 years as an "efficient" of which he would not be *liable* to be retained with the colors for more than seven; all service put in while under 20 years of age being regarded as "non effective." The average soldier enlisting at 18, would be *liable* to be retained with the colors till 27 years of age, and to serve in the reserve till 30; but being still in the prime of his life, he should, if possible, be induced to re-engage in a 2nd class reserve for such further periods of service as he is likely to retain his physical

(1) Major Adye, R. A.

efficiency, always supposing that his conduct and character render his retention desirable. Such terms of enlistment would only be adopted from motives of economy in transport and to provide the army abroad with men of somewhat longer service and of maturer age, but there would be no reason why men should be retained with the colors, of the army in England, any longer than is necessary to complete their education as soldiers; they might in the Infantry at all events, be allowed to complete their engagement in the reserve, after serving 3 (not necessarily "effective") years with the colors, conditionally on their undertaking to put in a certain number of drills and parades every year with such corps of regulars, militia or volunteers as may be most convenient; breach of the contract rendering a man liable to be brought back to the colors for not less than 7 years.

Since, consistently with allowing men to volunteer for foreign service, the oldest of those that enlist would be selected for "the draft," the numbers required for which would be reduced on the adoption of a longer term of service abroad, we may hope to complete the draft from men who were not less than 19 years of age on enlistment.

The practical result of the adoption of such measures would be:—

- (1) Men enlisting at and over 20 would serve 7 years (as now) with the colors and three (not five) with the 1st class reserve.
- (2) Men enlisting at 19 would serve 8 years (as they may be required to under existing regulations) with the colors and 3 (not four) in the 1st class reserve.
- (3) Men enlisting at 17 or 18 years of age would serve 3 years with the colors and 9 or 10 with the 1st class reserve.

In addition we should as heretofore allow men to engage for 12 and 21 years with the colors.

Such of the army abroad as is not quartered in India, which may be collectively termed the "Colonial army" would probably not be required to take the field before its reserves could reach it, nor can it be seriously attacked, so long as the British fleet remains undestroyed. It is the army of India principally, if not alone, which will be called upon to mobilize its field troops, without waiting for its reserves, to begin and to continue, perhaps for months, a struggle with such troops as are present in its ranks on the outbreak of war. And, finally, of the army of India that portion which demands that it shall always have a proper proportion of old soldiers in its ranks, is composed of those corps destined to immediately take the field, in the event of war, as India's first line, either of attack or defence.

Necessity of providing certain corps with a proportion of old soldiers.

Is it wise, or is it right, that England should possess in the army reserve, all, or nearly all, our soldiers of the most valuable age? The army abroad must be composed of "men of some age and experience not raw recruits, since to replace or add to them, on an outbreak of war, takes several weeks. Invasion may threaten us once in a century, European wars may involve us once in a generation, smaller campaigns may arise once a year or so; but the duty of maintaining our foreign garrisons in a state of efficiency, continues from day to day, knows of no intermittance and suffers no relaxation. For this reason it constitutes our most pressing obligation."⁽¹⁾

Lord Roberts has said that in the field the young soldier is physically and morally inferior to his maturer comrade, absolutely wanting in many military virtues possessed by the older man and more likely to succumb to those diseases which are "as likely to be the cause of military failure, as even indifferent strategy or want of discipline".

"India while paying a larger charge, receives a smaller service. England receives from India, as recruits for the army reserve, young, thoroughly trained and seasoned soldiers, immediately available for service."⁽²⁾ Finally, in view of the apparent susceptibility of the young soldier in India to contract those diseases which cause the majority of deaths in the British army in that country, in view of all that has gone before and much more that has been omitted, it seems necessary, on grounds of humanitarianism, of military expediency and common fairness to the Indian tax-payer, that there should be few or no very young men in the ranks of the British army in India, and a proper proportion of old and seasoned soldiers, at all events, in those corps destined, perhaps, to oppose a civilized and disciplined enemy, beyond the frontiers of our Empire.

"We have, too, in India to consider the effect on the country of reverses at the outset of a campaign."⁽³⁾ Whatever is *necessary* to its efficiency *must* be obtained for the army in that country.

To demand from men sent abroad 7 effective years color service, would result in the ranks of regiments abroad being filled with men from 20 to 27 years of age, but, if we admit the necessity of having always present with the colors of the "India first line" corps, if with no others—a proper proportion of men from 20 to say 35 years of age, we must endeavour to find a sufficient number of men from 27 to 35 years of age or something like 50 per cent of the men with the colors of those regiments.

(1) Major Aclie, R. A.

(2) Colonel Chenevix Trench, 20th Hussars.

(3) Colonel Maitland, Bo. S. C.

Since these regiments, under existing circumstances, would be subject to constant relief, it would be necessary to transfer these old soldiers to the relieving corps, and it would, therefore, be advisable to enrol them in a separate body or "special company, troop or section in each regiment, incorporated with and distributed throughout that regiment, only embodied on its relief, to be transferred to and again incorporated with the relieving corps or regiment.

We may endeavour to recruit this "special company" in a variety of ways; men enlisting for 12 or 21 years with the colors, on attaining 20 years of age should all be sent to India and if posted to the "special company" on attaining 27 years of age, would provide us with a certain number.

Methods of obtaining a certain number of old soldiers.

Men who having served 7 effective years with the colors, can be induced to re-engage to complete 12 years (i. e. some four or five years more) with the colors would supply us with others. These, however, are sources, from which, under existing circumstances, no considerable supply can be expected. The prospect of procuring his freedom from those bonds of discipline always so irksome to youth, of returning to his country, and of having a holiday, with a considerable sum of money—his deferred pay—in his pocket, is with "the young British soldier" almost always sufficient to counteract the attractions of the re-engagement bounty offered by the Indian Government.

With regard to "deferred pay" Lord Roberts asserts that "19 times out of 20 the money is of no benefit to the recipient." General Higginson points out that deferred pay being a "reversion which is practically inalienable," it is not difficult for men to borrow the money necessary to purchase their discharge. These, and others, have advocated the abolition of "deferred pay," a move that would, doubtless, result in many men re-engaging who will not do so now.

There is, however, another source from which, perhaps, a considerable supply of old soldiers could be drawn. After a year or so of civil life, some men find it difficult or impossible to obtain employment, their hands have lost their cunning, trade generally, or their particular branch of it, is depressed or over-crowded, perhaps they never had a trade at all, others have had their holiday, the "deferred pay" money has dwindled away and many think regretfully of the army, and would prefer to return to it rather than to continue a precarious existence. Why not enlist in "the special companies" men, who having served either 3 or 7 effective years, with the colors of the army at home or abroad, are still under 28 years of age, for a further period of color service of not less than 7 and not more than the difference between their ages on returning to the colors and 35.

Whether deferred pay were abolished or not, it would only be necessary for the nation, or the government, to recognize that length and merit of service constitutes a claim, of a magnitude proportionate to the value of that service, to State given or found employment, to largely increase the number of those, who will originally enlist for, or subsequently re-engage to complete 12 years service with the colors, or to return to the active army from the reserve.

Popularizing the Army.

It is not enough to draw up certain rules and regulations for the recruiting, and maintenance of the army, we must ensure that its monetary and other attractions shall be such as to induce a sufficient number of desirable men to prefer the profession of arms to the callings of peace. Supposing that no increase of the monetary attractions may be looked for, we must endeavour to make life in the army more pleasant, by demanding from our soldiers a modicum of hard or objectionable work consistent with perfect efficiency and by recreating their minds and their bodies that we may keep them in good health and spirits besides doing something towards ensuring that, on leaving our ranks, they shall not want.

A regimental institution, somewhat similar to Indian station *gymkhanas*, would, probably, do much to further our object. Such an institution, under the presidency of a senior officer and worked by a committee, whose members should severally be responsible for its various branches, should include minor clubs or societies for various games, gymnastics and athletics of every description, theatricals, music, a club for the more studiously inclined where knowledge of a higher order than that imparted at the regimental school might be acquired—a good library, a regimental workshop, where trades would be taught and practised, and a regimental garden. A soda water machine and ice machine should be regimental property and, with the coffee shop and the canteen, should be worked by the regiment. There is no reason why all the upholstering, tailoring, furnishing, wood, iron, and other work required by their officers or comrades should not be carried out by men of the regiment, in the regimental workshop; no reason why all vegetables and fruit consumed by the regiment should not come from its own gardens. Many of the branches would earn a certain amount of money; of this, part should be paid to the men themselves, especially to those engaged in the workshop and those in charge of the ice and soda water machines, the rest should go to form a regimental fund, which should be spent entirely for the benefit of the men themselves.

An institution combining instruction and amusement.

To give the men time for this, every duty or parade not practical or necessary, should be abolished. Exercises and competitions must not be made too competitive, lest a few should come to the front and the rest be disheartened.

These are some of many ways of counteracting the attractions of drink and the bazaar, of keeping men healthy and happy while with the colors and bettering their chances of obtaining employment on leaving them. These, too, are matters which depend for success almost entirely upon regimental officers, for most assuredly will success never result till they interest themselves in the matter sufficiently to head and organize the movement.

With regard to pay, rations, etc ; it is well to remember that Pay in money and in kind. men should not have cause to suspect or believe that they do not get all that was promised them on enlistment ; and it would be well to make the emoluments and privileges of the non-commissioned ranks such as will induce men to seek eagerly after promotion and prefer to re-engage rather than to take their discharge. Having dealt with certain methods of rendering life in the army more attractive to the soldier, we may consider what can be done for him after he leaves the colors for the reserve.

Perhaps, the greatest objection to the army, as a profession, is the reservist's liability to be recalled to the ranks, on the outbreak of one of our oft recurring little wars. Minor campaigns should be fought by the men with the colors and reservists should only be liable to be called up in the event of great national or imperial emergency.

This would probably do as much as anything else to render the army popular, as it would at once remove or lessen the difficulty the reservist experiences in obtaining employment and the uncertainty that now attaches to any private venture of his own.

Civil employment. This suggests the question of employment in civil life ; something has been done of late years and employment found for a certain number of old soldiers. It has been pointed out that there are many permanent posts about our camps and barracks, as orderlies, police, caretakers of canteens, recreation rooms and grounds ; there are moreover not less than 100,000 appointments in the Civil Service, 200,000 situations on the railways, and many civil appointments such as those of messengers, jail warders, park keepers, watchmen, rural postmen, and copyists, besides minor appointments in the clothing, supply, and civil departments of the army and navy, and a percentage of those in the Post and Telegraph and Police Departments which might well be filled by old soldiers and sailors.

Even if the State cannot give employment, it may do much towards obtaining it for men on leaving the colors, but, in view

of the unwillingness to assist exhibited by parliaments, success must mainly depend upon private exertions. Some one must arise amongst us to organize the movement, to interest the public in the matter, to convince it that not only patriotism, but self interest demands its co-operation, to goad an unwilling national assembly to action, and to prove the army as necessary to the nation, as the nation is to the army.

One of the defects of our present organization, is the regular periodic movement of complete units between home and foreign stations.

Present system of relief by complete units. "It is a wise and patriotic step, which seeks to identify each corps with a certain territorial area but, the territorial system cannot be complete till it is possible to station these corps within the limits of their recruiting districts in time of peace. The association of other local forces, such as the militia and volunteers, with corps of regulars, has done much, and would do more, if the tie were closer, to promote local interest and enthusiasm.

Development of the territorial system. There is a tendency to concentrate our troops at a few large garrisons, which tends to lessen the familiarity of the country with the army. The idea is, that by collecting a large number of troops in one camp or garrison, they obtain an opportunity of manœuvring in large bodies, which is alike good for the troops and good for their commanders. This, though a laudable object, may be carried too far; The combined operations rarely last more than a few weeks and during the rest of the year, the troops go through their ordinary drills, just as they do in smaller garrisons.

Would it not be better to scatter our troops as much as possible throughout the country, in small garrisons, marching them in the summer to the nearest large camp to go through a few weeks combined operations? This would give each corps some much needed exercise in marching, would bring them into camp in good condition and would accustom the country to the sight of soldiers, thereby stimulating recruiting; while the troops, if quartered in their own countries, would greatly strengthen the territorial tie. Such a plan would be in accordance with the tendency of the age, which is to draw closer the ties which bind the army to the country. "(1)

Desirability of quartering corps within their recruiting areas. "There is one condition which exists in every army, whose efficiency is of vital importance, to its country and which may, therefore, be regarded as an essential factor in producing that efficiency; this condition is that the war organization is precisely the same as the peace organization, the

(1) Major Adye R. A.

army corps, divisions, and brigades of an army, with their staff, trains and subsidiary organizations, exist in peace, just as they do in the field.

No strength in numbers, no individual bravery, not even excellence of individual units, will make an army really formidable in the field, unless its organization has been brought to a high pitch of perfection, and the required standard cannot be attained, nor even approached, unless the organization in which the army is to take the field is maintained in time of peace." (*)

It therefore, appears necessary to efficiency that the units of organizations should never change, and essential to the development of the territorial spirit that these units should be quartered within their proper districts.

In the case of corps proceeding on foreign service, preparations are commenced some months before moving between home and foreign stations. The case of corps moving between home and foreign stations. engagements, the unfit and under age, are exchanged for others ; with regard to these transfers and other matters, a voluminous correspondence commences, which will not, perhaps, terminate for more than a year. The training is interfered with, if not suspended during all this time, the voyage, and perhaps, a journey up country. Then commences a life to which the men and many of the officers are strange. Months must elapse before all get thoroughly settled down and the corps fit to perform any but the most ordinary duties, while the acclimatization of the men (which is principally "moral") is a matter of a year or two.

The case of a regiment returning home differs only in kind. On arrival in England men are transferred to the reserve or the depot, who together with the men transferred previous to departure, are replaced by recruits ; in effect an efficient corps is disbanded and re-raised from young soldiers.

The evils of relief by complete units. The evils of the system of relief by corps are as follows :—

- (a) The disorganization and reconstruction of the units moved.
- (b) The loss of time resulting from the interruption of training and drill.
- (c) The expense to the Indian Government of moving men from the country, who have spent but a short time there, and the expense and loss of efficiency in the bringing into the country men who have to be acclimatized, in place of those who are at the height of their efficiency.
- (d) The sliding scale of enlistments of the home army.

(*) Colonel Maitland, Bo. S. C.

When the corps abroad stand fast and are only fed by annual drafts there is no disorganization of units, training and drill is only interrupted during the voyage and march of the drafts, the Indian Government gets the benefit of the men's full service, the sliding scale of establishments becomes unnecessary, and there is no reduction of the number of units available on mobilization. Officers can always move, as now, between the home and foreign battalions, and as their term of service with the colors is so considerably exceeded by the stay of regiments abroad, no hardship would be inflicted on the men.

All that has been said with regard to the efficiency of a field army depending upon the constant character and composition of its organizations, applies equally to England and to India, both of which countries must be prepared to mobilize a field army of the highest possible efficiency, for operations against any, perhaps, a European enemy; until both countries can count upon the services of a certain number of units, not subject to removal or relief, their armies must be patch work creations and not really efficient. To the rest of the army abroad, however, this does not apply, it is distributed among so many garrisons, that it could never be organized in peace as in war, and the character of its stations varies so much as to make relief advisable.

This appears to involve giving to India a local force, which however, is scarcely the case. We must allow that a portion, at all events, of the native army is really available for imperial purposes, that army is not only localized in India, but, it must be at the entire disposal of the Government of India, and used for the good of the Empire as a whole, not for any particular part of it, unless, indeed, for the especial protection of the tax-payer who maintains it. The Indian army, therefore, is, as it always must be, a local force. But, a British army localized in India, at all times under the complete control of the War Office, is by no means a local force, but, rather, an army in permanent occupation of a country, which maintains it to preserve to it good order within and security from without.

The reorganization of the army, which resulted in the territorialization of its infantry, provided that, The number of corps at home and abroad. out of 141 line battalions, there should be Present system. 70 abroad, each with its amalgamated and fellow feeder battalion at home with which it should, at certain intervals of time, exchange positions and duties. The remaining 71 line and 7 guards battalions, or 78 in all, were to be permanently quartered in the British Islands. This scheme had one fault, it definitely fixed the limit number of battalions on foreign

service and was so constituted that the moment that limit was exceeded it was bound to break down in one of its essential details.

Since at no time can any one positively foretell the demands our foreign possessions will make in the future and since, at any time, a backward glance at the growth of the army abroad might have foreshadowed its continued increase, the scheme seems to have been a short-sighted one and predestined to failure, for it lacked elasticity.

The demands of various portions of the empire are bound to fluctuate, generally to increase, and any scheme of organization, that may be advanced must provide to meet those fluctuations without disturbing the system as a whole.

Instead of 71, there are now but 65 battalions at home, and Results of the present system. 76 not 70 abroad. There are thus 5 regiments with both battalions abroad, standing at a high peace strength, making, therefore, largely increased demands on their recruiting districts and sending large numbers to the reserve, from which they will need comparatively few on mobilization. Each of the remaining 65 battalions abroad may be taken to have its corresponding battalion at home; of the battalions abroad some are in India and at a higher peace strength than the others and the battalions at home are on a sliding scale of establishments.

The higher the peace strength of a battalion the more men will it send to the reserve in peace and the fewer it will need from the reserve on mobilization while the converse also holds good.

On mobilization battalions would be of very different quality, Varying quality of battalions on mobilization. their composition depending upon their peace establishment and on whether they were at home or abroad at the time. Battalions on the home lower establishment would not be able to complete from their own resources and would have to be filled up from surplus reservists of other corps, strangers to each other and their officers.

Finally it must not be forgotten that all those units moved Units moved in course of relief not available for war. in course of relief are, whether at home or abroad, so disorganized as not to be available for active service.

The 65 line battalions at home cannot number between them Regular reserves only just equal to completing battalions at home. more than 30,000 actives old enough and sufficiently trained for war, to which may be added some 47,000 line reservists, from the resulting total of 77,000 men of fit age, must be deducted 15 per cent casualties, including men failing to appear and the

medically unfit, leaving a residue of 65,500 men, a number barely sufficient to complete the home battalions.

A portion—15 to 25,000—of the regular reserves must, however, be allotted to the battalions abroad, their places, in the home battalions, being filled from the militia reserve.

The necessity of apportioning some of the reserves to corps abroad.

This will not only still further aggravate the condition of the home battalions on mobilization, to the destruction of "*esprit de corps*," territorial character and military cohesion in those battalions, but it must also, seriously affect, if it does not destroy, the efficiency of the militia.

Substitution of militia reservists.

The militia infantry totals some 85,000 men, divided among 133 battalions; the withdrawal of 15 to 25,000 militia reservists, would leave the militia from 60 to 70,000 men, on an average from 450 to 525 men per battalion, numbers which would include all the under age, under trained and other unfit men of the whole force.

The cavalry, on the home establishment, comprises 3 regiments of Household cavalry, with less than 1,300 men, 900 horses and no reserves and 20 line regiments with some 11,500 actives and 4,700 reservists, or 23 regiments and 17,500 actives and reservists. No single regiment could, therefore, be completed from its own resources. Some will have to be broken up to complete the others and even then our cavalry in the field will consist of weak regiments of weak squadrons and the officers, men and horses will, many of them, be strange to one another.

In the cavalry, more than in any other branch, it is necessary that officers should know the exact capabilities of men and horses under their command and the utmost that may be demanded of the individual under any given circumstances, that they should be in the habit of commanding, in peace, squadrons or regiments, of the same strength, as they would be required to handle in war and that the men should know their officers, their comrades and their horses; then, and then only, may we expect that cohesion, which is essential to success in battle and that dash, tempered with judgment, which alone can produce great results in reconnaissance. Mistakes are harder to retrieve in the cavalry than in any other arm; where everything is not as it should be, mistakes will be made, and mistakes in war are apt to be attended with disaster.

On the mobilization of our cavalry such a state of chaos, want of cohesion and lack of mutual acquaintance will reign, as added to the weakness of its field units, should ensure the defeat of any (except, perhaps, British) cavalry.

With regard to artillery, we find that in continental organizations, the proportion of six gun batteries to battalions of infantry is as 3 is to 4. We find a division, comprising 12 battalions of infantry, has attached to it 6 batteries of divisional artillery, and that an army corps of two such divisions includes in its corps troops 6 batteries of corps artillery. That is, an army corps of 24 or 25 battalions of infantry includes 18 batteries of divisional and corps artillery.

Our 7 guards and 65 line or 72 battalions of infantry, therefore, require to be supported by 54 batteries. There are on the home establishment 9 horse and 38 field, a total of 47 batteries; even supposing the whole of these would be available on mobilization, and detaching say 3 batteries to the independent cavalry organizations, we find we have 10 less than the 54 batteries required to support our regular infantry, and not a single field battery of any description, to support those masses of militia and volunteers we make such efforts to train as field troops. When, however, we are assured that some batteries will have to be broken up to provide ammunition columns and to complete the others for the field we begin to fear that the case of our artillery, which as far as it goes is, perhaps, the best in the world, is as bad if not worse than that of the other branches.

Specific suggestion—Infantry.

	Divide the British Islands, not including London which is regarded as common to the whole army, into
Brigades.	15 line brigade districts of about 2,200,000
inhabitants, numbered 2nd to 16th, combine London and the 2nd	
Divisions.	brigade district as the 1st divisional district and the other 14 line brigade districts
by Twos in sequence	as 7 divisional districts numbered 2nd to 8th; combine the 8 divisional districts in like
Army corps.	manner by Twos into 4 army corps districts
	numbered 1st to 4th; each of the 15 line brigade districts to be divided into 4 regimental districts, and each of the regimental
	brigade, divisional and army corps districts to possess a territorial designation.

From the 2nd battalions of the 1st to 25th regiments and the 2nd, 3rd and 4th battalions of the King's Imperial Infantry. Royal Rifle Corps and the Rifle Brigade (*i.e.* from 31 battalions) select 16, form them by Twos into 8 regiments of "imperial infantry," recruit one in each divisional district (somewhat after the manner of French "Régional" Régiments) giving each the number and territorial designation of the divisional district, to which it belongs (*e.g.* 8th Imperial Irish Regiment).

This force provides our infantry organization with that elasticity, which is necessary to enable it to meet any demands the empire may make on it without being affected as a whole, for the imperial infantry is susceptible of reduction or augmentation to any extent—all its 16 battalions may be stationed abroad, one or more regiments of imperial rifles may be added to it, each of its regiments may be given a third or even a fourth battalion, or one or both battalions of each regiment may be brought home, reduced in numbers, converted into a depot or finally abolished.

Increase the remaining line battalions from 125 to 128 by the conversion of 3 guards into 3 line battalions. Divide these into one rifle and 15 line brigades of 8 battalions each, select 64 rifles and line battalions, *i.e.* four in each brigade for service at home and a like number for service abroad; recruit the 4 "home" rifles battalions from London, and the other 60 "home" battalions from the 60 regimental districts, and permanently quarter these battalions within their proper districts. Link with each "home" battalion one "foreign" battalion. Giving battalions numbers and designations as may be considered most consistent with sentiment, tradition or popular feeling, at the same time designating them, for mobilization purposes only, 1st to 8th battalion rifles, 2nd to 16th brigade.

<i>Existing organization.</i>		<i>Suggested organization.</i>	
Guards battalions	7	Guards battalions	... 4
Line battalions	65	Line "home" "	... 64
	76	Line "foreign" "	... 64
		Imperial "	... 16
Total	148 battalions	Total	148*

* Permanently at home 68 battalions, permanently abroad 64 battalions, at home or abroad 16 imperial battalions.

Establishments—Regular Infantry.

PRESENT ESTABLISHMENTS.

	Actives.	Under 21.	Reserve.
7 Guards battalions	5,685	1,801	4,216
141 Line battalions	133,088	28,396	47,075
Total 148 battalions	138,773	30,197	51,291

Give each of the 148 battalions 900 men with the colors and
 Suggested establish- maintain in each rifle and line brigade a
 ments. special company of 350 old soldiers to be
 incorporated with the India first line battalions.

Of the 5,685 men with the colors of the 7 guards battalions,
 Immediate effect of 1,801 are "under age unfits"; if, therefore
 the suggestion. the Brigade of Guards be reduced to 4 batta-
 lions of 900 actives, the 3,600 men with the colors will include
 Guards Brigade—mo- 1,668 "under age unfits", apportioning to
 bilization of.— each of these 4 battalions 850 reservists or
 3,400 to the brigade, we obtain on mobilization :—

Actives	3,600
Reserves	3,400
<hr/>	
Brigade Total	7,000
Under age unfits	1,668
<hr/>	
	5,332
15p-c casualties	807
<hr/>	
Available	4,525

There remain, therefore, 28,530 "under age unfits" (1,783 per
 Rifles and line brig- brigade) and 47,891 reservists (2,993 say
 ades—mobilization of.— 3,000 per brigade) for division among the
 16 line and rifles brigades and we obtain on mobilization :—

Actives	3,600
Reserves	3,000
<hr/>	
Brigade Total	6,600
Under age unfits	1,783
<hr/>	
	4,817
15p-c casualties	620
<hr/>	
Available	4,197

As, however, a certain proportion of the reserves, hereby
 apportioned to the line brigades, would have to be sent to bat-
 talions abroad, we may provide that each line brigade shall send
 abroad 1100 fit men (250 to each "foreign" battalion in India,
 100 to the other foreign battalion, 250 to one of the imperial bat-
 talions) their places being taken by militia reservists, who should
 be withdrawn from the militia and come up for their training
 with the regular battalions, to which they may be allotted,
 on the latter being permanently quartered within their regi-
 mental districts.

40 A SCHEME FOR THE REORGANIZATION OF THE FIELD TROOPS &C.,

A table showing the immediate result of the suggestion.

	ESTABLISHMENT PER BATTALION.		Militia reser- vists per brigade.	TOTALS.		
	Activea.	Reservea.		Activea.	Regular reservea.	Militia reservea.
4 Guards battalions ...	900	850	...	3,600	3,400	...
64 " Home " „ ...	900	750	1,350	57,600	48,000	21,600
64 " Foreign " „ ...	900	...	...	57,600	...	...
16 Imperial „ ...	900	...	...	14,400	...	...
16 Special companies ...	350	...	...	5,600	...	...
Totals ...				138,800	51,400	21,600

In time, however, each guards battalion, of 900 actives, will consist of 100 non-commissioned officers and others, who may wish to remain 7, 12 or 21 years with the colors, and 800 men retained for 3 years only with the colors. Some 260 men should, therefore

pass every year to serve with the 1st class reserve for 7 to 10 years, who, together with men re-engaged in the 2nd class reserve, should number not less than 2,100 reservists of both classes, per battalion.

The "foreign" and imperial battalions, each of 900 actives serving with them for not less than 7 years, will require an annual draft of 140 to 150 men and should pass not less than 120 men per annum to serve with the 1st class reserve. Battalion reserves of both classes should number over 375 men.

The 8 "home" battalions in every division, having to feed a like number of "foreign" and 2 imperial battalions, would have to contribute between them 1,400 to 1,500 men per annum, or 175 to 185 men from each. We may, therefore, provide that of the 900 actives in each "home" battalion there shall be 100 non-commissioned officers and others serving for 7, 12 or 21 years with the colors; 200 men, the "draft in preparation," and 600 men retained with the colors for 3 years only, of these last 194 should pass into the first class reserve every year, serve in it for 7 to 10 years and, together with those re-engaged in the 2nd class reserve should provide a battalion reserve of both classes of some 1,600 men.

Each battalion would thus have its own particular reserves, and each unit destined for immediate service would be completed from its own instantly available resources.

Estimated full effect of the suggestion.	Establishment per battalion.		TOTALS.	
	Actives.	Reserves.	Actives.	Reserves.
4 Guards battalions.	900	2,100	3,600	8,400
64 "Home" „ ...	900	1,600	57,600	102,400
64 "Foreign" „ ...	900	375	57,600	24,000
16 Imperial „ ...	900	375	14,400	6,000
16 Special companies.	375	...	6,000	...
	Totals	...	139,200	140,800

The Militia Infantry.

Existing state. Consists of 133 battalions and 85,617 men (average 643 per battalion).

Suggested reorganization. Form one rifles and 15 line brigades (average 5351 per brigade) of 4 field and one depot battalions each, and of the same number and territorial designation as the corresponding regular brigade. Field battalions to consist of trained men only, to be numbered 1st, 2nd, 3rd, and 4th battalions rifles, 2nd.....15th or 16th militia brigade and to bear in addition the territorial designation of the "home" regular battalion of corresponding mobilization number. Depot battalions to consist of an instructional staff and recruits only, and to be designated the depot battalion, rifles, 2nd.....15th or 16th militia brigade.

Camps of exercise. The 8 Militia field battalions of each division, perhaps even the 16 field battalions in each army corps should be called up for training at the same time and act in co-operation with their regular battalions at corps or divisional manœuvres, the regular rifle battalion belonging to the army corps joining the corps camp.

Mobilization, British Infantry.

Regulars. The British infantry to consist in war as in peace of 4 army corps of 2 divisions of 2 brigades of 4 battalions each. The guards and 2nd line brigade forming the 1st division, the 4 battalions of the rifles brigade being attached one to each army corps.

42 A SCHEME FOR THE REORGANIZATION OF THE FIELD TROOPS &c.,

The militia to form 8 divisions of 2 brigades of 4 field battalions each and in the event of the invasion of the British Islands to be incorporated with the line brigade of corresponding number, excepting that the militia rifles would be brigaded with the guards. There would thus be in each army corps 17 regular and 16 militia battalions.

Until regular battalions could be completed from their own resources and militia reservists take the field with militia battalions, it would be necessary to complete militia battalions as far as possible from volunteers from the volunteers.

In the event of the regular army taking the field on the continent of Europe, militia brigades would complete (from superfluous regular and militia reservists and others) 2 battalions, which might either be incorporated with the corresponding regular brigade, raising army corps from 17 to 25 battalions, or be formed into 4 divisions of 8 battalions for service on the lines of communication, to take over from the regular battalions the siege of fortresses, defence of positions and occupation of positions, or to free, for the field, regular battalions in the Mediterranean or the West Indies.

The Reorganization, British Cavalry.

The British cavalry comprises 3 regiments of Household Present organization. cavalry (1st and 2nd Life Guards and the Royal Horse Guards) 7 of Dragoon Guards (1st to 7th), 3 of Dragoons (1st, 2nd and 6th), 5 of Lancers (5th, 9th, 12th, 16th and 17th) and 13 of Hussars, or 31 regiments; of which the Guards and 1st and 2nd Dragoon regiments are "Heavy," the Hussars "Light" and the others "Medium" Cavalry, of the two latter 9 regiments are in India and one in Africa; and finally, the Household Cavalry only is recruited from men engaging to serve 12 or 21 years with the colors and, therefore, has no reserves.

Existing establishments.

Household Cavalry.....	1,298	} at home	
Line Cavalry at home.....	11,482		12,780
" " in India.....	5,948	} Africa	
" " in Egypt.....	170		
" " in S. Africa.....	497		667
		} abroad	
			6,615
31 Regiments	19,395		
Reserves	4,677		
Total	24,072		

Somewhere* has the story been told that, of the gentlemen who attended Charles II in exile, three troops of Guards were formed at the Restoration, and that these three troops were subsequently converted into as many regiments—the 1st and 2nd Life Guards and the 1st Dragoons (Dragoon Guards?); whether this story is true or not, the military history of the 1st and 2nd Life Guards has been indetical.

The present unsatisfactory state of affairs in the British cavalry is obviously to be remedied in one of two ways; we may increase the establishments, or reduce the number of regiments. The first method would cost money and the money is not forthcoming, or, if it were, is more urgently required for the artillery, we are therefore forced to accept the 2nd alternative. The reduction of the number of regiments may of course be effected in many ways; two are here appended.

Remedies.
1st Method suggested. Amalgamate the 1st and 2nd Life Guards as "The Life Guards," convert the 6th Dragoons into a Lancer Regiment and reduce one of the Dragoon Guard or Hussar Regiments. Result, four regiments of Heavy Cavalry, (The Life Guards, The Royal Horse Guards, 1st and 2nd Dragoons), 7 of Dragoon Guards (4 at home, 2 in India and 1 in Africa), 6 of Lancers (4 at home and 2 in India) and 12 of Hussars (8 at home and 4 in India), *or* 6 of Dragoon Guards (4 at home and 2 in India) and 13 of Hussars (8 at home, 4 in India and 1 in Africa).

2nd Method suggested. The second method referred to is to reconstitute as a Guards Regiment the 1st Dragoon (Guards), convert the 6th Dragoons into Lancers and the other Dragoon Regiments into Medium Cavalry. Result four regiments of Heavy Cavalry (all Guards regiments) 8 of Dragoons or Dragoon Guards (6 at home and 2 in India), 6 of Lancers (4 at home and 2 in India,) and 11 of Hussars (6 at home, 4 in India and 1 in Africa).

By either method we obtain :—

	Heavy Cavalry — Lancers — Sword Regiments.		
	Home	4	12
	India	...	6
Resulting organizations.	Africa	...	1
	4	6	19

and the reduction of the cavalry amounts to 2 regiments at most.

* In Macaulay's History of England?

Proposed organization.

The four heavy regiments to be recruited throughout the British Islands and to number 750 men with the colors and 700 horses. The "African" regiment to have an establishment of 750 men. The other 24 regiments to be formed into 8 brigades (recruited one from each divisional district) of 3 regiments each—one to belong to the independent cavalry divisions (it may be alluded to as the "mobilized" regiment), one for India and one to be attached as divisional cavalry to the infantry division of the same district,—with the following establishments :—

The "Mobilized" Regiment	...	750 men	700 horses.
The "Indian" Regiment	...	750	" ?
The "Divisional" Regiment	...	500	" ?
Brigade Total	...	2,000	" ?

We thus have at home 4 heavy and 8 territorial (4 lancer and 4 sword) regiments of 750 men and 700 horses, and 8 divisional regiments of 500 men. The latter should be permanently quartered within their recruiting districts in peace, they should receive all recruits and transfer them to the heavy, "mobilized" "African" or "Indian" regiments as may be required and they should keep a register of private riding horses available on mobilization in their own districts. The heavy and mobilized regiments should be mobilized in peace as 2 independent divisions of cavalry.

No regiment included in the independent divisions should have less than 4 field squadrons; a regiment consisting of 4 field squadrons each of 150 sabres, of 3 field squadrons on service detaching one, as it may often have to do, ceases to be a regiment. No field squadron should number less than 150 sabres, a weak unit in the field will very soon become an ineffective one, and as all Continental squadrons in the field number 150 sabres, there is no object in opposing weak squadrons to strong ones; Englishmen have held their own against heavy odds before now, and no one doubts their ability to do so again, but, "God is on the side of big battalions." Armies are reckoned by battalions, batteries and squadrons, let ours be big in size if few in number and the greater shall be their glory.

Enlistment.

It has been suggested that cavalymen should be enlisted to serve 9 years with the colors and 3 in the reserve, that is a suggestion we may accept or we may demand 10 effective years service,

of which three shall be passed in the reserve, or give cavalrymen at home the option of serving 10 effective or 12 years with the colors, of which they will be allowed to spend various periods, not amounting in all to more than 3 years, on furlough or leave, during which time they would receive reserve pay. Men would thus be given a few months or a year's leave at a time and would not get very rusty at their work.

The heavy, "mobilized," "African" and "Indian" regiments having, each 750 men engaged to serve 7 effective, 9, 12, or 21 years with the colors and most of them from 3 to 5 years in the 1st class reserve, should have not less than 250 furloughed men and reservists of both classes belonging to each of them.

The "Indian" and "African" regiments would require from 110 to 115 men each per annum, or 1000 to 1040 between them, who would all have to pass through the divisional regiments, to whom indeed all recruits should be sent in the first instance. The 4,000 men on the establishments of the divisional regiments, should include the recruiting staffs of the whole cavalry, instructional staffs, the drafts in preparation and recruits in transit to the heavy and "mobilized" regiments. The real strength of each divisional regiment would therefore be about 250 with the colors and some 75 furloughed men and reservists of both classes.

On mobilization, however, divisional regiments should form the depots for the cavalry in the field and each of them would receive a troop of 75 unfit and superfluous men and 50 horses and 125 reservists belonging to one of the heavy regiments, a squadron of 150 unfit and superfluous men and 100 horses and the 250 reservists, of the "mobilized" regiment and 250 reservists of the "Indian" regiment of the same brigade and its own 75 reservists. Total 225 unfit and superfluous actives, 700 reservists, and 150 unfit and superfluous horses. The 250 reservists of the African regiment would join the nearest depot, an addition of some 30 men to each. Each divisional regiment would take the field in two squadrons and 300 mounted men, send 250 reservists to its Indian regiment and form a depot of about 900 unfit and superfluous men and reservists of all descriptions and unfit and superfluous troop horses and all the riding horses procurable in the district.

The 4 heavy and 8 "mobilized" regiments would take the field in 4 squadrons and 600 mounted men each, organized by brigades and division as in peace.

The Yeomanry.

To serve in the yeomanry especially in its commissioned ranks entails sacrifices of time and money which constitutes that force the most patriotic and disinterested body of men in the world and to abolish it would be a most ungrateful task.

The yeomanry turn out for 8 days training in the year. One day being Sunday and leave being often granted for another, the actual training is reduced to 6 or 7 days. Since, however, a little over two thirds of the force appear for their annual training, it is clear that the average training of each man in it is further reduced to 4 or 5 days per annum.

The British officer or trooper of regulars has to spend some months at recruits drill and in the riding school before he is considered fit to begin learning his other duties, if he had to train his horse as well several months would elapse before he could be considered efficient as an *individual* and could begin to learn his other duties. Is the yeoman more naturally apt than the officer or the trooper of regulars? Even if we look upon the yeoman as a scout only, he must first learn and also teach his horse to cross a country at speed and to fight in single combat, before he can be taught the duties of the scout, and how to take care of himself, his horse, his arms, accoutrements and saddlery on service.

Any one who has seen yeomanry on parade go over jumps, or at the Royal Military Tournament, at which only *prize winners* at district assaults at arms may compete, must have the gravest doubts whether the average yeoman can even ride.

The yeoman should be required to appear with his horse for 20 days drill per annum, at the headquarters of a regiment of cavalry, a battery or a riding school of his own and he should engage to serve either at home or abroad on the same terms as the militia reservist and receive the same pay. The whole force should then be reduced to a squadron (of any strength) in each brigade or each divisional district.

On mobilization yeoman and volunteer light cavalry should join their divisional cavalry depot from which 2 squadrons of "reserve cavalry" should be made up for service with the militia formations.

The Artillery.

The mobile artillery of the British army consists of 20 horse (11 in India, 9 at Home), 80 field (38 at home and 42 in India) and 10 mountain (1 at home, 1 in Africa, 8 in India) batteries, besides 2 horse and 4 eight gun field dépôt batteries.

There are various branches in the artillery with tactics of their own, which demand particular study and whose officers, should, therefore, belong permanently to them. It would, perhaps, be unfair to post officers, now belonging to the artillery in general, to particular branches, but, commissions given in the future should appoint officers to (1) The horse artillery attached to cavalry (2) artillery attached to infantry or (3) fortress or garrison artillery.

Suggested Reorganization.

Convert the 2 depot horse batteries into actives and raise 2 more horse batteries, from the resulting 24 form 8 into one—the horse artillery division. To distinguish its batteries from the others call them “troops,” number them 1st to 8th (4 at home and 4 in India), arm with a lighter gun, attach a troop to each cavalry brigade and keep fully horsed and manned and able to mobilize as rapidly as the cavalry. It might be advisable to attach 2 machine guns and a machine gun detachment to each of these batteries.

Convert the 4 eight gun depot field batteries into 8 four gun depot batteries.

And form the 16 horse, 80 field, and 8 depôt batteries into 8 territorial divisions each of 2 horse (1 at home, 1 in India) 10 field (5 at home, 5 in India) and 1 depôt batteries, recruited one from each divisional district.

Form the 10 mountain batteries into 1 division.

The Royal Regiment of Artillery will thus consist of one horse, 8 territorial, and 1 mountain divisions, besides garrison or fortress companies.

On mobilization the 4 troops of horse artillery would take

Mobilization of the the field with the particular cavalry brigades to which they might be attached in peace, and each territorial division would send 1 horse and 1 field battery to the corps artillery of its particular army corps, 4 field batteries to its particular infantry division, and its depôt battery to the militia.

One scarcely dare suggest any alteration in nomenclature, but, for purposes of reference mobile artillery will be alluded to as *field* artillery, horse artillery attached to cavalry as *horse* artillery, horse and field batteries detailed for service with the corps troops as *corps* artillery, field artillery detailed for service with the infantry divisions as *divisional* artillery, and depot batteries as *reserve* artillery.

Reserve batteries should be raised to 6 guns each and a second battery added in each territorial division.

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Each territorial division would thus consist of 4 corps (2 at home 2 in India), 8 field (4 at home and 4 in India) and 2 reserve batteries. And the whole field artillery of :—

	Horse	Corps	Divisional	Reserve	Mountain
England	4	16	32	16	1
India	4	16	32	...	8
Africa	...	...	...	...	1
Total	8	32	64	16	10.

Mobilization of the Home Army for Service.

ABROAD

<i>Higher Units.</i>	<i>Field Army.</i>	<i>Each of.</i>
2 Independent divisions of cavalry of	2 Brigades of	{ 1 Heavy regiment. 1 Lancer regiment. 1 Sword regiment. 1 Troop horse artillery.
4 Army corps of	2 Divisions of & Corps troops	{ 2 Brigades of 4 battalions 4 Divisional batteries. 2 Squadrons of cavalry. 1 Rifles battalion. 4 Corps batteries.

Totals.

64 squadrons of cavalry, 52 troops and batteries of artillery and 68 battalions of infantry.

Lines of Communication.

(Each militia brigade completes 2 battalions from superfluous regular and militia reservists and others).

<i>Higher Units.</i>	<i>Each of.</i>
4 Divisions. composed of militia only or of militia and regulars, (now serving abroad and relieved by the militia) in equal proportions.	2 Brigades of 4 battalions. 4 Reserve squadrons. and 4 Reserve batteries.

Totals.

16 Squadrons of cavalry, 16 batteries of artillery, and 32 battalions of infantry.

Grand Totals.

80 Squadrons of cavalry, 68 troops and batteries of artillery and 100 battalions of infantry.

Mobilization of the British Army to meet Invasion.

<i>Higher Units.</i>		<i>Each of.</i>
2 Independent divisions of cavalry of	} 2 Brigades of	{ 1 Heavy regiment. 1 Lancer regiment. 1 Sword regiment. 1 Troop of horse artillery 2 Brigades of 4 battalions of regulars and 4 bat- talions of militia.
4 Army Corps.		
	} 2 Divisions of	{ 4 Divisional batteries. 2 Reserve batteries. 2 Squadrons regular cavalry. 2 Squadrons reserve cavalry.
	and	{ 1 Rifles battalion.
	Corps Troops.	{ 4 Batteries corps artillery
<i>Totals.</i>		

80 Squadrons of cavalry, 68 troops and batteries of artillery and 132 battalions of infantry.

In England it is quite unnecessary to consider the question of an invasion on the scale of a Continental invasion. So long as the British Fleet can keep the seas, a real invasion is *impossible* and on the destruction of the English Navy becomes *unnecessary*, for the victorious enemy could starve the country into submission, without landing a single soldier.

There are, however, many, not only in the English army, but in continental ones, who are firmly convinced of the possibility of making a "*rush*" for, and effecting the capture of, some place of importance in the United Kingdom—London for instance—the possession of which would enable the fortunate enemy to enforce their own terms and to demand such an indemnity as would repay the costs of the campaign and the risk of the undertaking.

Propinquity, and the possession of a large military and mercantile marine and a great standing army are as necessary to the country, that would attempt the enterprise, as the secretly pledged neutrality of every power, that might, otherwise, be tempted to take advantage of the temporary dislocation of her military and naval organizations. The success of the undertaking would depend upon a combination of such extraordinary good management, good luck

and secrecy and its risks would be so great that nothing but the determination to be prepared for *any* emergency, need induce us to provide for such an eventuality.

Given the necessary conditions, the number of armed men a foreign power could place on our shores would be limited by the amount of marine transport she could collect, without exciting suspicion, and the length of the voyage. The French alone of continental nations could attempt the "rush" with any hopes of success and they could not possibly place an army of more than 150,000 men in the British Islands.

The office of the British army, like that of every other army, is twofold—(1) attack and (2) defence—the former office resolves itself into participation in a continental war and the latter into meeting a rush on—London—or co-operation with the Indian army in the defence of our Eastern Empire.

The ability of any army to discharge its duties depends, not upon the number of armed men in its ranks, but upon the number of its combinations of efficient units of all three arms in proper proportions, and the completeness of its subsidiary organizations.

Just as the strength of a chain is that of its weakest link so the strength of an army—the number of its efficient combinations—is limited by the strength of its proportionately weakest arm, which with ours is undoubtedly its artillery.

The immediate increase of our artillery, recommended in the preceding pages, amounts to the conversion of two depot into two active batteries of horse artillery and the raising of two new ones, and the whole increase amounts to the conversion of 4 eight gun depot field batteries into 8 reserve (but effective) six gun batteries and a subsequent addition of still another 8 reserve batteries. That is to say depot batteries would be done away with and 4 horse and 16 reserve batteries would be added. Since increased military expenditure is not to be hoped for it is necessary that economies should be effected elsewhere.

The organization here recommended would enable every unit to complete itself for the field from its own resources, but the militia reserve would at first be necessary to complete the 64 "home" battalions on mobilization; they should, therefore, be withdrawn from the militia and divided among those 64 battalions

as a 3rd class reserve. In time, however the regular reserves would increase to such an extent as to be more than equal to completing their proper corps. When that point is reached, we may form the militia reserve into 16 regiments, of 2 battalions each, recruiting one from each brigade district, and provide that every man enlisting in them shall undertake to serve abroad in the event of great national or imperial emergency. This would result in each brigade district having 4 regular and 2 militia battalions permanently quartered in it. And

The infantry of the home field army to be limited to 100 battalions. our field army for service either at home or abroad would number 100 battalions which is sufficient for our needs, and would enable us to defeat any "rush" on the country, if it had time to mobilize.

The rest of our infantry would be required for one purpose only,

defence—the defence of positions, guarding important places or covering the mobilization of the field army.

Limiting the number of units of the auxiliary forces included in the field army to 32 battalions of militia infantry, we may select and fortify certain positions, determine the greatest number of men required for their defence, strictly limit the Auxiliary forces to the strength required and arm, train and organize them for that purpose alone.

This in time would probably result in abolition of the yeomanry, the reduction of the militia from 133 battalions and 85,000 men to 32 battalions and 35,000 men and the reduction of volunteer infantry from 166,000 to 100,000 men. All militia and volunteer artillerymen should be garrison gunners. The economies effected by these reductions, together with the conversion of 3 guards into line battalions, the reduction of 2 regiments of cavalry and the permanent quartering of battalions abroad or at home, should go a long way towards paying for increased reserves and the increase in the artillery. The British army at present consists of unorganized masses of armed men, most of whom, even if organized, would be useless for want of the artillery to support them.

With a field army of 100 battalions we should not be content till we have 4 horse, 24 corps and 48 field batteries on the home establishment.

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*Tables showing the effect of the reorganizations suggested.
Regular Infantry—Immediate Effect.*

	ESTABLISHMENTS PER BATTALION.		Militia reserves per brigade.	TOTALS.		
	Actives.	Reserves.		Actives.	Regular reserves.	Militia reserves.
4 Guards battalions ...	900	850	...	3,600	3,400	...
64 "Home" ...	900	750	1,350	57,600	48,000	21,600
64 "Foreign" ...	900	—	...	57,600	...	...
16 Imperial ...	900	...	...	14,400	...	...
16 Special companies ...	350	...	...	5,600	...	...
Totals ...				138,800	51,400	21,600

Militia—Immediate Effect.

16 Brigades (of 4 field and 1 depot or recruit's battalion) of 4,000 men. Militia totals 64,000 men (does not include militia reserves).

Regular Infantry—Full Effect.

	Establishment per battalion.		TOTALS.	
	Actives.	Reserves.	Actives.	Reserves.
4 Guards battalions ...	900	2,100	3,600	8,400
64 "Home" ,, ...	900	1,600	57,600	102,400
64 "Foreign" ,, ...	900	375	57,600	24,000
16 Imperial ,, ...	900	375	14,400	6,000
16 Special companies ...	375	...	6,000	...
Totals ...			139,200	140,800

Militia Infantry—Full Effect.

16 Regiments of two battalions each, as all recruits would have to engage to serve abroad in the event of great imperial emergency, the total number would probably not exceed 25,000 men and would not be required to exceed 40,000 (780 to 1,250 per battalion).

Cavalry.

		Establishment per regiment.		TOTALS.	
		Actives.	Reserves.	Actives.	Reserves.
4 Heavy regiments	...	750	250	3,000	1,000
8 "Mobilized" "	...	750	250	6,000	2,000
8 "Divisional" "	...	500	75	4,000	600
8 "Indian" "	...	750	250	6,000	2,000
1 "African" "	...	750	250	750	250
Totals				19,750	5,850

N. B.—At home 13,000 actives, India 6,000, Africa 750 (Egypt 150). In time the African regiment may be reduced to 500 men, and the total number raised to 20,000 actives and 6,000 reserves. Divisional regiments would then have an establishment of 550 actives.

Yeomanry.

Reduced to 16 squadrons, two in each division.

Effect of Suggestion on Artillery—Home Establishment.

		BATTERIES.			
		Horse.	"Corps."	"Divisional."	"Depot." Total effective.
	Present establishment	9	38	6	47
(a)	immediate Increase	4	16	32	8 52
				'Reserve'	
(b)	2nd "	4	16	32	8 68
(c)	3rd "	4	16	32	16 68
(d)	4th "	4	24	32	16 76
(a)	For 2 divisions of cavalry and 4 army corps of 17 battalions (<i>i. e.</i> 68 battalions).				

- (b) For 2 divisions of cavalry, 4 army corps of 17 battalions and 2 divisions of infantry on lines of communication (*i. e.* 84 battalions).
- (c) For 2 divisions of cavalry, 4 army corps of 17 battalions and 4 divisions of infantry on lines of communication (*i. e.* 100 battalions).
- (d) For 2 divisions of cavalry and 4 army corps of 25 battalions (*i. e.* for 100 battalions).

PART II.

ORGANISATION OF THE FIELD TROOPS OF THE ARMY ABROAD.

The British Army Abroad.

The organization suggested in Part I. would render available for service abroad :—

Troops available for service abroad.	Mediterranean.			India.						America.		
	Gibraltar.	Malta.	Egypt.	Cyprus.	India Proper.	Burmah.	Aden.	Ceylon.	Singapore.	Hong Kong.	Mauritius.	S. Africa.
9 Regiments British Cavalry ...	...	...	...	...	8	...	...	...	...	...	...	1
4 Troops Horse Artillery ...	...	...	...	...	4	...	...	...	...	...	...	...
16 Batteries Corps Artillery ...	...	...	...	...	16	...	...	...	...	...	...	...
32 Batteries Divisional Artillery ...	...	...	...	...	32	...	...	...	...	...	...	...
9 Batteries Mountain Artillery ...	...	...	...	...	8	...	...	...	...	...	1	...
64 Foreign Battalions ...	2	4	2	1	48	4	1	1	...	...	1	...
16 Imperial Battalions ...	1	2	1	...	...	...	...	...	1	1	1	2
												1
												1
												1
												4

The 48 battalions in India Proper, should consist of 3 battalions (say the 5th, 6th, 7th) of each of the 16 rifles and line brigades and should not be subject to relief. The other battalions should be relieved, each by one of its own sort, at stated intervals.

Almost all non Indian stations abroad, are held solely for the benefit of the navy, and the troops, in many cases, get no opportunity of practising combined operations, while those in the Western Hemisphere could not be available for service anywhere else, if they were required. Halifax and the Bermudas would be more appropriately garrisoned by marines.

In South Africa, the power of the warlike native races has been destroyed and the rapid growth of the English community has almost, if not quite, placed these colonies in the position of Australia and Canada. South Africa may still need cavalry and artillery, but, with the exception of one battalion in garrison at some port on the Cape route to the East, the infantry might be withdrawn.

The object of stationing 4 Imperial battalions in the Mediterranean is to render available one battalion in each regiment for service in England or India, by relieving the four in the Mediterranean and adding to them the four at home.

The substitution of marines for the military in Halifax and the Bermudas, and the withdrawal of 2 battalions from South Africa, would render it possible to quarter one battalion of each regiment of Imperial infantry in the British Islands.

For the present, however, there would be 4 Imperial battalions at home available for minor campaigns, and it is hard to imagine where, with the exception of China, Persia or Egypt, it could ever be possible for one of our little wars to break out, which would demand the presence of more British battalions than the 4 available.

It has been said that minor campaigns should be fought by the men with the colors, the conditions of these wars are much the same to day as they ever were. Our battalions have been accustomed to take the field with expeditionary forces about 600 strong and the suggested establishment of 900 men per battalion, should enable all Imperial and "Foreign" battalions to take the field 765 to 800 strong.

Force necessary for minor campaigns. For the more important minor campaigns, the following numbers should more than suffice :—

24 Squadrons of cavalry at 150 men.....	3,600
25 Battalions of infantry at 775 „	19,875
12 Batteries of artillery at 160 „	1,920
	<hr/>
	25,400

Composed as follows :—8 squadrons, 9 battalions, or the equivalent of 9 battalions, and 8 batteries from England ; 16

squadrons of native cavalry, 16 battalions of native infantry and 4 batteries from India.

The 8 squadrons of British cavalry to be made up one from each divisional regiment. The 9 British battalions to consist of the 4 Imperial battalions at home, 1 battalion of marines, 1 "foreign" battalion from Gibraltar, 2 from Malta and 1 from Egypt. To relieve the last four, five, provisional battalions may be formed in England, the 3,875 men required, being made up by detachments from each of the 68 regular regiments on the home establishment, and volunteers from the regular and militia reserve and, perhaps also, from the militia and volunteers. These provisional regiments should be apportioned 1 to Gibraltar, 2 to Malta and 2 to Egypt.

One field or divisional battery in each of the home territorial divisions should be completed from the other batteries of the same division and from volunteers from the reserves.

India would send 4 regiments of Native cavalry of 4 squadrons each, 16 battalions of Native infantry and 4 field batteries.

The cavalry would be organized as two brigades of one British composite and one Native cavalry regiment each, and as one division with a battery attached.

The rest of the force would be organized as one army corps of two divisions of 2 brigades of two British and four Native infantry battalions each, the divisional troops would consist of one regiment of Native cavalry and 4 batteries of artillery with each division, and the corps troops would consist of one British battalion and 3 batteries of artillery.

Should a great war break out, while we were engaged in a little one, the reserve battery in each home territorial division of artillery would have to be substituted for the divisional battery already on service, and each divisional cavalry regiment would take the field in one, instead of in two squadrons.

INDIA.

The Reorganization—Native Army.

Any scheme that may be advanced for the reorganization of the Native army, should provide that it would, as a whole, be organized on an even system, in order to enable it to put forth its utmost strength, either for attack or defence, for operations within or beyond its frontiers, in co-operation with the British army. The Armies of India, its divisions and regiments, or groups of regiments, should be of one size and of one strength, and the battalions of each group or regiment, should be of exactly similar composition, within that group or regiment.

Effect upon the home army of a great war breaking out while the Empire is engaged in a small one.

At present, the Presidential armies are of very unequal strength, regiments consist sometimes of

Present state. two battalions, though as a rule they have one only. Single battalion regiments, though, generally grouped by threes, are some of them grouped by twos and others again stand alone. And, finally, the regiments within each group are often of dissimilar caste composition. The Presidential armies are not, in most cases, under the direct control of the Commander-in-Chief in India, and certain forces are not under his orders at all. Such a state of affairs can scarcely produce the highest possible military efficiency of the whole and must result, at times, in annoying, if not serious, complications.

To recapitulate, the whole army of India should be under the direct control of the Commander-in-Chief in India; the armies, divisions, and regiments, or groups of regiments, should be of one strength, and the battalions, within each regiment or group, should be of exactly similar caste composition, and, it may be added, that, as "a weak tactical unit in the field will very soon become an inefficient one," no battalion should have less than 2 companies of any class represented in its ranks.

It has been suggested that, at least, three battalions in each of the 16 line brigades of British infantry, **The British Infantry in India.** should be permanently on the Indian establishment. Out of 53 British battalions on that establishment there are:—one in Aden, 4 in Burmah and 48 in India Proper. Supposing Aden and Burmah garrisoned either by "Imperial" or "Foreign" battalions, the 48 battalions in India Proper, would consist of 3 battalions from each line brigade, or 16 groups of 3 battalions each. Regiments of Native Infantry have, usually, one battalion only, but, since they are, as a rule, linked or grouped by threes, it only remains to do away with the exceptions to that rule, to obtain a certain number of groups of British and Native regiments, each of 3 battalions of exactly similar character, composition and quality.

Reorganization—Native Infantry.

We may commence a review of the Native army with its Infantry and of that with its Gurkha Regiments.

We find there are the 1st, 2nd, 3rd, 4th and 5th Gurkha **Gurkhas** Rifle Regiments of two battalions each, and **Existing battalions.** the 9th (Khas Gurkha) 42nd, 43rd and 44th Gurkha Rifle Regiments of Bengal Infantry and the 10th Regiment of Madras Infantry, of one battalion each.

In accordance with the scheme of providing every regiment or group of regiments, with three battalions, **Reorganization in groups of 3 battalions.** it would be necessary to form the 5 two battalion regiments into regiments of 3 bat-

talions, This might be effected in one of three ways:—we may

Methods of effecting
reorganization.

(1) convert the 5 single battalion regiments into the required third battalions as they stand, (2) raise 5 new third battalions or (3) combine the two foregoing methods. It may be urged, against the first proposal, that four of the five single battalion regiments are stationed in Assam and the Chin Hills, where their presence is absolutely necessary to the preservation of order among the wild and unsubdued tribes of those parts, an objection which is insuperable, rendering the first method impossible and the 3rd feasible only in the case of one battalion—the 9th Bengal Infantry. That regiment could be formed into the 3rd battalion of one of the other five, but, there are many objections to such a move:—

Objections to the employment of high caste Gurkhas in India.

(1) the men of the 9th Bengal Infantry are high caste men, it is a new regiment itself and it would necessitate the reorganization of the whole regiment with which it might be incorporated (2) we have come to regard the Gurkhas, of the classes hitherto enlisted by us, as wholly and entirely dependable and, though no one would be justified in asserting that the Khas Gurkha would prove less trustworthy, one may expect that, of the two, the high caste men would be more *likely* to be influenced by and to sympathise with outside Hindu religious or political movements (3) a Khas Gurkha Regiment in India would perhaps be likely to influence the opinions and behaviour of other Gurkha corps in that country (4) Be this as it may, granting that the high caste man may prove as brave and as loyal as the other, we should be introducing a new and untried and therefore uncertain element among the Gurkha corps in India, by employing in that country, the high caste man, whose very caste prejudices are more or less against him as a soldier. Some of these objections to the employment of high caste Gurkhas in India may or may not be valid or of great consideration, but there can be no objections to their employment in other parts—Burmah for instance.

In examining the proposal to raise 5 new battalions of the classes hitherto enlisted by us, we must consider the sources from which such increased numbers may be drawn. We may endeavour to raise and maintain 40 extra companies, by an increased enlistment of the desired classes from Nipal, a demand to which the supply is, probably, wholly inadequate; or we may withdraw the required 40 companies from other battalions enlisting Gurkhas, substituting men of other suitable classes. The battalions in which such substitution could be carried out are the Guides, the 42nd, 43rd, 44th Bengal Infantry and 10th Madras Infantry Regiments and such of the Assam and Burmah Military Police Batta-

lions as enlist Gurkhas. The classes from which extra companies might be raised for substitution, are Brahmin, Chetri, Limbu, Newar, and other Gurkhas from Nipal, Rai and Jirwa Gurkhas, Lepchias, Bhutias and other hillmen from about Darjiling, Bhutan, and Assam, and hillmen from Garhwal and Kumaon. With the exception of the Guides, from which only one company could be withdrawn, the battalions referred to above are quartered in parts of the Indian Empire where the employment of hillmen of good courage, accustomed to jungle life and warfare is imperative. These battalions, under the present state of affairs, are not equal to the work they have to perform, as is proved by the fact that a battalion and a half of Hindustanis are now quartered in Assam, a Bombay regiment in Manipur, and more than five Madras and Burmah regiments (besides the 10th Madras Infantry already referred to) and at least one Military Police battalion recruited from natives of India, in the Chin Lushai hill tracts. In the future, perhaps the near future, the whole of these districts and the intervening country will have to be thoroughly subjugated. This, and the possibility of complications on the eastern frontiers of Burmah demand the augmentation of our forces in those parts, scarcely substitution, and, if substitution, then the replacing of Hindustanis, Madrasis, and Bombay men and not the Gurkhas already in those parts by such extra companies as may be forthcoming from the classes enumerated.

Still if we admit the *necessity* of giving every regiment or group of regiments three battalions, we may attain our object by withdrawing from the Guides one company of Gurkhas and from those Regular and Military Police Battalions of Assam and N. Burmah, which enlist Gurkhas, 15 companies of the classes required, immediately transferring to these parts the 9th and 39th Bengal Infantry Regiments.

Select one of the 5 two-battalion regiments, which with the 16 companies withdrawn from the Guides and Burmah and Assam battalions of Regulars and Military Police, will provide the other four two-battalion regiments with 3rd battalions; number these regiments 1st, 2nd, 3rd and 4th Gurkha Rifles.

This scheme involves the transference of the 9th and 39th Bengal Infantry regiments to Burmah and Assam respectively. As many as may be expedient, of the officers of these corps, should be transferred to the two new 3rd battalions, the remainder would be indemnified for their change of quarters by holding improved positions in their regiments and the probability of being actively employed in the near future.

The Bombay Infantry.

We may next turn to the Bombay Infantry, which consists of 26 battalions, numbered and grouped as per margin. Since the districts, from which the Bombay Army was expected to draw its recruits, was quite incapable of meeting the demand, we find that more than a third of the men in its ranks are foreigners; it has, therefore been suggested that the force should be so far reduced as would enable the supply of natives to equal the demand.

1st, 8th, 9th.
2nd, 12th, 13th.
3rd, 5th, 10th.
4th, 23rd, 25th.
7th.
14th, 16th, 17th.
19th, 20th, 22nd.
21st.
24th, 26th.
27th, 29th, 30th.
28th.

Of the 26 battalions, the 24th, 26th, 27th, 29th and 30th are now recruited entirely from Punjabis, of whom there are also a certain number in the ranks of other battalions. These latter it might be as well to collect in certain regiments, Punjabi Mahomedans and Border Tribesmen in the 7th (which was until lately linked with the 24th and 26th), Sikhs and such few Dogras and Punjabi Hindus as may be forthcoming in two other battalions (13th and 14th ?) The 7th, 24th, 26th, 27th, 29th, and 30th, should be recruited from Punjabi Mahomedans and Border Tribesmen only. The 13th, and 14th, completed as far as possible from Sikhs and Dogras respectively should be transferred to the Punjab and completed from the required classes after transference.

Of the rest of the Bombay Infantry (18 battalions), the 1st and 2nd are Grenadiers ; 3rd, 5th and 10th, Light Infantry, 4th, 5th and 25th Rifles ; 21st, Marines ; and 28th Pioneers.

Of foreigners in the Bombay army there are, besides Punjabis, a large number of Hindustanis, whose elimination may be effected by transferring to Bengal three more battalions (16th, 17th and 22nd ?) as they stand, gradually drafting to them Hindustani Brahmins and other Hindus (to the 16th) and Hindustani Mahomedans (to the 17th and 22nd) in exchange for Bombay men.

The remaining 15 battalions may be grouped and designated

Grouping and reorganization of remaining battalions.	1st, 8th, 9th	25th Mahratta Grenadiers.	as per margin.
	2nd, 12th, 28th	26th Mahratta Fusiliers.	Two, perhaps
	3rd, 5th, 10th	27th Bombay Light Infantry.	even three, of
	4th, 23rd, 25th	28th Bombay Rifles.	these groups
	19th, 20th, 21st	The Bombay Marines.	could be re-
	7th, 24th, 26th	15th Punjabis.	cruiuted from
	27th, 29th, 30th	16th Baluchis.	Mahrattas, one

from Sindh and Bombay Mahomedans, and one from other Bombay

classes including Hindus, Jews, Christians and Parwaris. The Bombay Marines would garrison the ports of Bombay, Karachi and Aden and might enlist a certain number of Soudani, Somali and other Arabs, if considered advisable.

The Punjab Army

The regiments of Bengal Infantry and the Punjab Frontier Force recruited from Punjabis, which may be taken to include Punjabi Mahomedans, Border Tribesmen, Sikhs and Dogras, are shown in the margin, according to their grouping and caste constitution, the groups being lettered for convenience of reference, from which it

The Guides.	(a)	14th, 15th, 45th B. I.	Sikhs.	will be seen
	(b)	19th, 22nd, 24th B. I.	Mixed.	that groups
	(c)	20th, 21st, 26th B. I.	Mixed.	(h) and (k)
	(d)	23rd, 32nd, 34th B. I.	Sikhs.	contain two
	(e)	25th, 27th, 28th B. I.	Mixed.	battalions and
	(f)	29th, 30th, 31st B. I.	Mixed.	groups (f),
	(g)	33rd B. I. Punabi Mahomedans.		(g) and (p)
	(h)	35th, 36th, B. I. Sikhs.		one only.
	(k)	37th, 38th B. I. Dogras.		
	(l)	40th B. I. Border Tribesmen		
		P. F. F.		There does
	(m)	1st, 3rd, 4th S. I.	Mixed.	not appear to
	(n)	2nd S. I., 2nd and 6th P. I.	Mixed.	be any partic-
	(o)	1st, 4th, 5th P. I.	Mixed.	ular reason
	(p)	Guides Infantry, one battalion. Mixed.		

for enlisting Sikhs, Dogras and Gurkhas in the Guides, now that these classes are so largely represented in other regiments. There are many desirable Border and Transborder classes, inhabiting countries but little known to us who contribute few or no soldiers to our ranks, whose enlistment is therefore, peculiarly appropriate to the Guides and who might come forward more readily, if they were all collected in one corps, than if attempt were made to enlist them, by single companies, in several regiments; but as it might not be altogether advisable to recruit a regiment wholly from such classes, we may provide that a certain proportion, perhaps half, of the whole shall be drawn from a dependable class of the same creed. Punjabi Mahomedans for instance.

The conversion of the 13th Bombay Infantry into a Sikh regiment, whether it could be completed from men of that class already in the Bombay Infantry, or not, together with the formation of such new companies of Sikhs, as may be required to complete the Punjab army would entail fresh demands on a class, which is already over recruited. It is, however, only necessary to adopt, in some form or other, the lately advanced suggestion, concerning the formation of a Sikh Rifle Regiment—to provide, say, that a certain number of existing battalions, or com-

panies, in the Bengal, or Punjab Frontier Force Infantry, shall be recruited from Sikhs 5 ft 4 in to 5 ft 8 in height—to, at once, greatly lessen the strain on this class and, at the same time, to improve the class of recruits forthcoming.

With regard to the reorganization of the 14th Bombay Infantry, as a Dogra regiment, there is small hope of exchanging its present men for Dogras of the other Bombay battalions, for this class is practically non-existent among them. It would be necessary to transfer to it, from Regiments of Bengal Infantry, some 6 companies, and to complete it with recruits.

To provide the 14th Bombay Infantry with 6 companies of "Mixed Regiments." Dogras, to give the three regiments of each group a similar caste constitution and to do away with single companies, would entail some slight reorganization of the "mixed" Punjabi regiments of Bengal Infantry and the Punjab Frontier Force. The caste constitution of these 22 battalions, as given in the "Bengal and Punjab Infantry Manual," is shown on a table annexed, which though, perhaps, not quite up to date, may be taken as substantially correct.

Reorganization of
"mixed" battalions.
are.

It will be noticed that the totals of the various classes enlisted by these battalions are.

	P. M.	B. T.	Sikhs.	Dogra.	Gurkhas.
12 Mixed B.I. Regts.	18	23	42	15	
10 Mixed P.F.F. Regts.	15	22	27	15	1
Grand Totals.	33	45	69	30	1

Both in the Bengal Infantry and Punjab Frontier Force regiments Khattaks, though a Pushtu speaking people, are sometimes returned as Punjabi Mahomedans, since Sagri Khattaks inhabiting Cis-Indus country can be included under that heading; being an extremely favorable class, which does not appear to get on very well with others, we may endeavour to obtain the best results from it, by gradually collecting them in a few battalions, by the exchange of companies.

With a view to completing the Guides with Punjabi-Mahomedans and Border Tribesmen, and to placing the other regiments in a position favorable for future reorganization as class battalions, we may endeavour to enlist in them

Reorganization with a view to the formation of "class" battalions in the future.

28 Punjabi Mahomedan, 24 Khattak (completed if necessary from Marwats, and Nizis, if they can be induced to enlist, Punjabi Mahomedans of the Shapur Jang districts, and any other class or classes, which may be considered suitable including, perhaps, the Lower Bangash) and 28 companies of other Border Tribesmen classes, which entails increasing the number of Mahomedan companies in these battalions from 78 to 80.

Of the 15 companies of Dogras in the Bengal Infantry six of the seven single companies should be drafted to the 14th Bombay Infantry and three of the remainder exchanged with the Punjab Frontier Force for as many companies of Sikhs. Raising 2 Mahomedan and 3 Sikh companies to complete, enlisting 24 existing companies of the Bengal Infantry or Punjab Frontier Force regiments (say the latter) from Sikhs 5 feet 4 inches to 5 feet 8 inches and completing the Guides we get.

First step in reorganization "Mixed" battalions.

	P. M.	Khattaks.	Other B. T.	Sikhs.	Dogras.	Gurkhas.
12 B. I. Regts.	18	...	24	48	6	
9 P. F. F. Regts	6	24	...	24	18	
Guides Infantry.	4	...	4	...	...
Grand Totals.	28	24	28	72	24	

A reorganization, which does not affect the 29th, 30th and 31st Bengal Infantry regiments. If however, these battalions exchanged 2 Dogra companies each, with Punjab Frontier Force regiments, for a like number of Punjabi Mahomedans, the totals would become.

Reorganization "mixed" battalions, second step.

	P. M.	Khattaks.	Other B. T.	Sikhs.	Dogras.
12 B. I. Regts.	24	...	24	48	...
9 P. F. F. Regts.	...	24	...	24	24
Grand Totals	...	24	24	72	24

A reconstitution, which renders these battalions susceptible of

Effect of suggested re-organization.

reorganization as 6 mixed Punjabi Mahomedan and Pathan, 6 Sikh, 3 Khattak Light Infantry, 3 Sikh Light Infantry and 3 Dogra Light Infantry battalions (Punjab Frontier Force battalions being light infantry).

Supposing the 33rd Bengal Infantry exchanges a wing of Punjabi Mahomedans, with the 40th Bengal Infantry for a wing of Pathans and that these two regiments are amalgamated with the Guides; that the 19th 22nd, 24th, 29th, 30th and 31st Bengal Infantry, 1st, 3rd and 4th Sikh Infantry, and 13th Bombay Infantry become Sikh, the 20th, 21st, 25th, 26th, 27th and 28th Bengal Infantry Mahomedans, the 2nd Sikh Infantry, 2nd and 6th Punjab Infantry and 14th Bombay Infantry Dogra and the 1st, 4th and 5th Punjab Infantry Khattak battalions and that the 14th Bombay Infantry, 37th and 38th Bengal Infantry are made Light Infantry, we may group and designate, for mobilization purposes, the Punjabi Regiments of the Bengal Infantry and Punjab Frontier Force as follows :—

Reconstitution and grouping of battalions.	Guides Inf. 33rd B. I, 40th B. I.....	Guides Infantry
	14th B. I, 15th B. I, 19th B. I. }	{ 5th Sikha.
	22nd B. I, 24th B. I, 25th B. I. }	{ 6th Sikha.
	29th B. I, 30th B. I, 31st B. I. }	{ 7th Sikha.
	35th B. I, 36th B. I, 13th Bo. I. }	{ 8th Sikha.
23rd B. I, 32nd B. I, 34th B. I.	The Sikhs Pioneers	
1st S. I, 3rd S. I, 4th S. I.	9th Sikh Light Infantry.	
1st P. I, 4th P. I, 5th P. I.	10th Khattak Light Infantry.	
2nd S. I, 2nd P. I, 6th P. I.	11th Dogra Light Infantry.	
37th B. I, 38th B. I, 14th Bo. I.	12th Dogra Light Infantry.	
20th B. I, 21st B. I, 25th B. I. }	{ 13th Punjabia.	
26th B. I, 27th B. I, 28th B. I. }	{ 14th Punjabia.	

The Hindustan Army.

The numbers, caste composition and grouping of the "down country," or Hindustani regiments of Bengal Infantry, are shown

Three battalions needed to complete groups.	1st B. I, 3rd B. I.	Brahmins.	in the margin,
	2nd B. I, 4th B. I, 16th B. I.	Rajputs.	from which it will
	5th B. I, 12th B. I.	Hindustani.	be seen, that one
		Mahomedans.	Brahmin (16th
	6th B. I, 10th B. I, 13th B. I.	Jats.	Bombay Infantry)
	7th B. I, 8th B. I, 11th B. I.	Rajputs.	and two Mahome-
	16th B. I, 17th B. I.	Hindustani.	
		Mahomedans.	

dan (17th and 22nd Bombay Infantry) battalions are needed to complete those groups which have two battalions only.

The Hyderabad Contingent is one of those forces, which was referred to, as not being under the orders of the Commander-in-Chief in India. It is recruited mainly from Hindustanis and should be incorporated with, and stand in the same position as, the other corps of the army of Hindustan. The infantry comprises 6 battalions, numbered and grouped as per margin; these groups should be recruited one from Rajputs and the other from Mahomedans.

The official term "Hindustani Mahomedan" is much too comprehensive, and includes classes more dissimilar, ethnologically, than "Sikh" and "Jat," in which the difference is one of religion only. We should distinguish between the Rajput Mahomedan known as the Ranghur, the Moghul, the Rohilla, the Hindustani Pathan, the Syad, the true Shaikh and the one "converted to the faith" and other classes of Hindustani and Purbya Mahomedans. Let us, at all events, have "Ranghur," "Moghul," "Rohilla," and "Hindustani"; let us have one group recruited from Ranghurs and other Rajput Mahomedans, a second from Rohillas of Rohilkhand and Hindustani Pathans, and a third from Moghuls from all parts of India, designating, for mobilization purposes, the groups of Hindustani regiments, completed from Bombay, and the Hyderabad Contingent Infantry, incorporated with the army of Hindustan, the 17th Brahmins, 18th, 21st, 23rd Rajputs, 20th Jats, 19th Rohillas, 22nd Ranghurs, and 24th Moghuls.

Madras Infantry.

The Madras Infantry comprises 32 battalions (numbered and grouped as per margin), of which 7 have been permanently transferred to Burmah. Of the remaining 25 battalions, 7 are at present quartered in Burmah and 18 in the Presidential district. 15 Battalions would be equal to performing the duties of the Madras Army in India and might be grouped and designated "The Madras Pioneers," the 29th, 30th (Light Infantry), 31st and 32nd Regiments Madras Infantry.

1st, 4th 21st, Pioneers	} Permanently transferred to Burmah.
2nd, 15th, 26th.	
3rd, 23rd (Lt. Infantry)	
5th, 16th, 27th.	
6th, 14th.	
7th, 19th, 24th.	
8th, 17th, 25th.	
9th, 11th, 28th.	
10th Gurkhas	
12th, 29th, 30th.	
31st, 32nd 33rd.	
15th, 20th, 22nd.	

Reorganization and grouping of 15 battalions.

Before the reorganization of the 7 Madras battalions permanently transferred to Burmah, nearly half the men in the ranks of the Madras Infantry were drawn from that, apparently, undesirable class the Telinga or Telagu, and it is fair to suppose, that the numbers of this class still amount to a third of the men in the ranks of the other 25 battalions.

The Native Infantry comprises 128 battalions, a number susceptible of being formed into 42 groups of three battalions and one of two; if it were considered desirable to complete the 43

Suggested increase of the Native Infantry by one battalion.

the reduction of one

Suggested reduction of one battalion.

Groups with three battalions each it would be necessary to raise the total number to 129. Having raised 2 new battalions of Gurkhas the reduction of one Madras battalion may be resorted to, to obtain the required number, while to eliminate men of undesirable classes, to improve the quality of recruits of other Madras classes, to relieve Hindustani and Bombay corps in Assam and Manipur and Madrassi battalions in the Chin Lushai districts, to provide these districts and Burmah with a permanent garrison, recruited from suitable classes, and to form armies and divisions

Suggested transference of 9 battalions. of equal sizes (without of course rendering any unequal to the proper discharge of its duties) it would perhaps be well to permanently transfer as they stand 9 more battalions to Burmah (in the first instance).

Burmah

The Burmah Infantry comprises 7 battalions lately transferred from Madras, the 10th Madras Infantry or 1st Burmah Rifles being recruited from Gurkhas and the other six from Natives of

7 Battalions already transferred.

northern India and the N. W. Frontier. It has also been suggested that 9 more battalions should be permanently transferred *as they stand*, six of these and the 12th, 29th, 30th, 31st 32nd and 33rd Madras Infantry should be grouped by threes, designated the 33rd, 34th, 35th and 36th Burmah Infantry, and recruited from such men of the classes, enlisted by other regiments in India, as may be spared ; other suitable classes, from all parts of India, not enlisted by Indian regiments, including various classes of Border Tribesmen and Punjabis ; from the sepoy of the Burmah Military Police, as that force is reduced ; and, if it becomes desirable or necessary to tap fresh sources, from Malays, who have served us with credit in the past and would doubtless, do so in the future.

The N. E. Hill Tracts.

The 10th and the other three Madras battalions recommended for transfer may be considered in conjunction with the local battalions of Assam, a province, which with Manipur, the Lushai, Chin and Kachin Hills and the intervening districts, constitutes a portion of the Indian Empire characterized by a similarity of physical features and inhabited by wild and unsubdued tribes of kindred origin.

The local regiments are the 42nd 43rd and 44th Gurkha Rifle Regiments of Bengal Infantry. It has however been found necessary to support these regiments with some 5 or 6 battalions of Hindustanis, Bombay men and Madrassis whose relief and substitution by corps of hillmen accustomed to a similar country and climate is highly desirable.

Besides the 3 battalions mentioned above the local forces comprise the Mogaung and Myitkyina battalions of Burmah and the Naga Hills, Lakhimpur and Surmah valley battalions of Assam Military Police, from which it has been suggested 15 companies of Gurkhas should be withdrawn, the 9th and 39th Bengal Infantry regiments being substituted instead.

To enable us to withdraw the Hindustani, Bombay and Madras battalions at present quartered in these districts, it would first be necessary to re-raise, for those battalions from which 15 companies of Gurkhas were withdrawn, a like number of companies of suitable classes, which would restore the local forces to their present position and, secondly, to gradually recruit the three Madras battalions, recommended for transfer to these parts, from men of suitable classes, which would result in

the augmentation of the local forces by five battalions, viz the 9th and 39th Bengal Infantry and these three Madras Infantry regiments.

The local forces would then consist of the 9th, 39th, 42nd, 43rd, 44th Bengal Infantry, 10th and three other Madras Infantry regiments besides military police. The regular battalions may be grouped as the 37th (Khas. Gurkha), 38th (Gurkha) and 39th, (Garhwal) Rifles and we may expect the police battalions to become in time the 40th, Assam (?) Rifles.

Such a scheme, however, involves the *gradual* raising of 39 extra companies of hillmen of various denominations, and we must consider whether these classes are equal to the demand.

In the first place, though the number of Gurkha battalions in India would hereby be increased from 10 to 12, no increased demands would be made on Gurkhas of the classes enlisted by those battalions, since the extra battalions were to be obtained by the withdrawal of existing classes from other battalions. These and other of the lower caste classes of Nipal are perhaps equal to meeting a slightly increased demand, while the high caste Brahmins and Chetris of that country are equal to supplying many new companies in addition to the existing 9th Bengal Infantry.

Reorganization advocated would entail no fresh demand on Gurkha classes enlisted by 1st. to 5th. regiments.

companies of these

The lower Gurkha castes of Nipal equal to a slightly increased supply.

Brahmins and Chetris

High Caste Gurkhas of Nipal equal to supplying 3 battalions in all.

Garhwal and Kumaon are surely equal to supplying at least one battalion in addition to the 39th Bengal Infantry. We may therefore expect to obtain 3 battalions of high caste Gurkhas (including the 9th Bengal Infantry) and 3 battalions of Garhwalis, Kumaonis and the lower caste Gurkha classes of Nipal including the 39th Bengal Infantry, that is 4 battalions of these classes in addition to existing regiments, or 32 of the required 39 companies, while the various Gurkha classes of Darjiling, Assam and other districts outside Nipal, Lepchas, Butias and other hillmen are equal to supplying the remaining 7 companies and to making up any possible short comings in the other classes.

Hillmen of Garhwal and Kumaon equal to supplying 2 battalions in all.

Gurkhas of Nipal and hillmen of Garhwal and Kumaon equal to supplying 32 extra companies.

Other hillmen equal to supplying remaining 7 companies required.

The 42nd, 43rd, and 44th, Bengal Infantry regiments at one time enlisted few Khas Nipal Gurkhas, the classes that were equal to supplying 24 companies in the past are presumably equal to doing so in the future if required.

The Native Cavalry.

The Native Cavalry comprises 19 Bengal, the Guides, 4 Punjab, 3 Madras, 7 Bombay, 4 Hyderabad Contingent, and 2 Central India Horse Regiments, of which the Guides and Hyderabad Contingent Regiments, have 3 and the others 4 squadrons of two troops each.

There are, therefore, 40 regiments, 155 squadrons and 310 troops. The Central India Horse and Hyderabad Contingent Cavalry are not, but, should be under the orders of the Commander-in-Chief in India.

In all except the Bombay and Madras, the "class troop" system obtains. The Regiments may be roughly grouped as follows.

Class.	Regiments.	Remarks.
Hindustanis...	1st B. C, 2nd B. L, 3rd B. C, 4th B. C, 5th B. C, 6th B. C, 7th B. C, 8th B. C, 1st L. H. C, 2nd L. H. C, 3rd L. H. C, 4th L. H. C, 1st C. I. H, 2nd C. I. H.	Including 18 troops of Punjabis.
Punjabis ...	9th B. L, 10th B. L, 11th B. L, 12th B. C, 13th B. L, 14th B. L, 15th B. L, 16th B. C, 17th B. C, 18th B. L, 19th B. L, Guides, 1st P. C, 2nd P. C, 3rd P. C, 5th P. C, 5th Bo. C, 6th Bo. C, 7th Bo. L.	The Punjab Cavalry regiments enlist 4 troops Hindustanis and the Bombay Cavalry regiments are not completed from Punjabis only.
Madraasis ...	1st M. L, 2nd M. L, 3rd M. L,	Not Silladar Regts.
Bombaymen...	1st Bo. L, 2nd Bo. L, 3rd Bo. C, 4th Bo. C.	Including Foreigners.

The reorganization of the Native cavalry could not be effected as easily as that of the Native infantry ; there are comparatively few class regiments and the caste constitution of the others is often very mixed. (2) Most of the regiments have been formed on the silladar system, the horses and equipment are really private property and the regimental funds in a way private affairs. (3) For the reasons given, in considering the British cavalry, regiments should be able to take the field with 600 mounted men, and

their numbers, therefore would have to be reduced from 40 of 6 or 8 troops to 31 of 10 troops. The 10 troops in each regiment, could be organized in 5 squadrons, but, for the reasons already advanced against weak units, it would be necessary to provide that the field squadrons should be class squadrons, which would necessitate the 5th or depot squadron being composed of as many classes as were enlisted in the field squadrons, and in numbers proportionate to the number of field squadrons of each class in the regiment. Instead of the class troop, we must adopt the class squadron system, and in view of the paucity of British Officers and the objections to a depot squadron in peace, better results would, probably, result from the organization of regiments in four than in five squadrons.

The reorganization of 40 regiments of 155 squadrons in 31 regiments of 124 squadrons would inflict a great deal of hardship on the British Officers, for it would reduce the number of commandants by 9, seconds in command by 9, adjutants by 9, squadron commanders by 31 and block the promotion of the others.

As a first step towards reorganization, having ascertained the total number of each class enlisted by the Native cavalry, the numbers of class regiments of each class to exist in the future may be fixed. For instance, supposing, from the numbers of the various classes in our ranks, it were determined to form in the future 6 regiments of Sikhs, the Guides and 6 others of Punjabi Mahomedans and Border Tribesmen (15th Bengal Lancers, 17th Bengal Cavalry.....), 1 of Dogras, 1 of Dogras and Rajputs (Raiputana if possible), 1 of Rajputs, 3 of Jats (of the Ravi and Montgomery Bar, of Jeysalmir, Bikanir and Bhartpore, if they can be got to enlist, besides those of Rohtak and Hissar and of Hindustan), 3 of Ranghurs and other Rajput Mahomedans, 3 of other Hindustani Mahomedans of all descriptions, 1 of Mahrattas and other Hindus of Bombay, 2 of other Bombay classes, 1 of Madras silladar cavalry and 2 of Madrassis. The class troop system should be applied to the ~~whole~~ Native cavalry and the total number of troops of each class enlisted may be fixed at 60 troops of Sikhs, 70 of Punjabi Mahomedans and Border Tribesmen, 15 of Dogras, 15 of Rajputs of all descriptions, 30 of Jats of all descriptions, 30 of Ranghurs and other Rajput Mahomedans, 30 of other Hindustani Mahomedans, 10 of Mahrattas and other Bombay Hindus, 10 of Bombay, Sindh, and other Mahomedans, 10 of other Bombay classes, 10 troops of Silladar cavalry enlisted throughout southern India and 20 of Madrasis as now enlisted.

As a first step—select 9 regiments to be disbanded and 31 for augmentation and reorganization.

The Madras cavalry comprises 24 troops ; collect, if possible 4 troops of volunteers for service in the Madras Silladar Regiment (to which the title "The Deccan Horse" would, perhaps be appropriate). Divide the remainder equally between the other 2 regiments.

The 4 "down country" Bombay regiments comprise 32 troops ; collect, if possible, 2 troops of volunteers for service with "The Deccan Horse" and divide the remainder equally among 3 regiments.

Of the 33 Bengal, Punjab, Central India, Hyderabad and "up country" Bombay regiments, break up 8 regiments and from the remainder withdraw 3 troops of Sikhs from the Guides, and, in almost all cases, such single troops as may exist in the others. Apportion the withdrawn troops and those of the broken up regiments among the 25 reorganized regiments as may be required to complete their squadrons to $2\frac{1}{2}$ troops of one class, and the Guides to 5 troops of Punjabi Mahomedans and 5 of Border Tribesmen, collecting, at the same time, 4 troops of volunteers, for service with the Deccan Horse.

As a rule, regiments having only one troop of a class would lose it, 2 or 3 troops would become $2\frac{1}{2}$ and 4 troops 5. Regiments would thus consist of (1) 4 classes enlisted in as many class squadrons (2) of 3 classes enlisted in one class wing and in 2 class wings (3) of 2 classes in 2 class wings or 3 squadrons of one class and 1 of another or (4) altogether of one class (e. g. 1st B. C, 14th B. L, 15th B. L, 17th B. C. and the Guides). Such a reorganization would not violently affect any of the augmented regiments, except the Guides, while the reorganization of the whole in class regiments, could be easily and gradually effected by the interchange of class squadrons as occasion served.

On the augmentation of the 31 reorganized regiments to 10 troops each, they should be formed of 4 squadrons divided into four troops each. A Native Cavalry regiment would then consist of 16 troops, "organized in 4 squadrons, with the following establishment—commandant, 4 squadron commanders, 8 squadron officers, 1 adjutant, 1 medical officer, 4 rissaldars, 8 rissaidars 8 jemadars, 1 woordie major, 16 kote duffadars, 64 duffadars (including 1 farrier-major, 1 salutrie, armourer, 1 trumpet-major), 1 assistant salutrie, 3 musicians, 8 farriers, 8 camel sowars and 640 sowars—Totals 15. British officers—21 Native officers 789 Natives of all ranks.

Finally, Native cavalry regiments having no reserves, should with the exception of the Guides, be grouped or brigaded by threes and to make up to the British ranks their loss of pay and position, a Brigadier should be appointed to each brigade, and one squadron officer in each regiment should be appointed as supernumerary squadron commander.

The staff of each squadron would consist of 1 squadron commander, 2 squadron officers, and one rissaldar or rissaldar major. Each squadron should train its own recruits and young horses, and the Adjutant should be a regimental staff officer in charge of the regimental office work, regimental and other accounts and should perform the duties of Quarter-Master, being at the same time relieved of the training of recruits and young horses.

The Native Artillery.

Comprises 8 mountain batteries (4 Frontier Force, 2 Bengal and 2 Bombay), 1 Punjab garrison battery, and 4 field batteries of the Hyderabad Contingent, besides 6 mountain guns attached to the Assam Gurkha regiments and 4 mountain guns in the Chin Hills.

The 8 Frontier Force, Bengal and Bombay mountain batteries should be formed into one division and the battery in Burmah withdrawn. The 6 mountain guns in Assam and the 4 in the Chin Hills should be formed into 2 six gun batteries, a new battery should be raised for Burmah and one for the Kachin Hills. The result would be an increase to the mountain artillery of 14 guns. One Bombay mountain battery might be re-armed with the 2.5 inch gun, and the Burmah batteries with the old 7 pounder gun, which is more suited to the nature of the country than the other.

To meet this increase of the mountain artillery the 4 Hyderabad field batteries might be broken up; there are no doubt certain obstacles in the way of such a move, but, they cannot be insuperable.

Sappers and Miners.

The Madras sappers and miners should be enlisted from Tamils only, the Bombay sappers and miners should be raised to the same establishment as the Bengal corps and might be transferred to and enlisted from the Punjab.

Recapitulation.

The Army of India.

British.

British Cavalry:—2 dragoon guard, 2 lancer, and 4 hussar regiments.

British Artillery:—4 troops horse artillery, 16 corps, 32 divisional and 8 mountain batteries.

British Infantry:—53 battalions viz, in India Proper 3 battalions from each of the 16 rifles and line brigades; In Aden 1 and in Burmah 4 other battalions.

Indian Troops and Armies.

The Punjab Army.

The Queen's Own Corps of Guides (4 squadrons of cavalry and 3 battalions of infantry).

Cavalry.

1st to 6th Sikhs, 7th to 12th Punjab, 13th and 14th Dogra and 16th Jats (15 Regiments, of which 6 belong to Frontier Force).

Artillery.

8 Batteries of mountain artillery of which six would be armed with the 2·5 inch gun and two with the 7 pounder (3 of the former and one of the latter could always be detached to Bengal and Bombay).

Infantry.

Divisions.	Regiments.	Stations.
1st Gurkha Rifle Division.	{ 1st Gurkha Rifles. 2nd Gurkha Rifles. 3rd Gurkha Rifles. 4th Gurkha Rifles.*	{ Dehra Dun. Lansdowne. Bakloh. Abbottabad.
2nd Sikh Division.	{ 5th Sikh Infantry 6th Sikh Infantry 7th Sikh Infantry 8th Sikh Infantry	{ All Stations west of the Jamna, including Delhi and Meerut with Dehra Dun, Lansdowne and Chakrata as annexes of Meerut.
3rd Panjab Lt. Infantry Division.	{ 9th Sikh Light Infantry* 10th Khattak Light Infantry* 11th Dogra Light Infantry* 12th Dogra Light Infantry	
4th Panjab Division.	{ 13th Punjabis 14th Punjabis 15th Punjabis* 16th Baluchis*	

The Sikh Pioneers.

The Panjab Sappers and Miners.

The Army of Hindustan.

Cavalry.

The 15th Rajputs, 17th 18th Jats, 19th, 20th and 21st Ranghurs, 22nd Hindustanis, 23rd Rohillas, 24th Moghuls.

Stations:—Bareilly (2 squadrons Fyzabad), Lucknow, Cawnpore (1 squadron Nowgong), Allahabad (1 squadron Calcutta), Saugar, Goona (2 squadrons Agar) Hingoli (1 squadron Auranabad), (1 squadron Mominabad), Bolarum.

* Frontier Force Regiments.

<i>Infantry</i>		
<i>Divisions.</i>	<i>Regiments</i>	<i>Stations</i>
5th Hindustan Division.	17th Brahmins	Agar, Nasirabad, Jhansi, Nowgong, Allahabad, Benares, Do- runda, Dinapore, Lucknow, Cawnpore, Fyza- bad, Bareilly,
	18th Rajputs	
	19th Rohillas	
	20th Jats	
6th Central India Division.	21st Rajputs	Calcutta, Barrackpur, Ali- pur, Raipur. Jabalpur, Saugor, Ellich- pur, Kampti. Bolarum 2, Hingoli, Ja'na.
	22nd Ranghurs	
	23rd Rajputs	
	24th Moghals.	

The Bengal Sappers and Miners.

The Army of the Deccan.

Cavalry.

25th, 26th, 27th, Bombay cavalry (including one regiment of Mahrattas) 28th, 29th, 30th Madras Lancers.

<i>Infantry.</i>		
<i>Divisions</i>	<i>Regiments.</i>	<i>Stations.</i>
7th Bombay Division.	25th Mahratta Grenadiers.	Baroda, Ahmedabad. } 4. battalions
	26th Mahratta Fusiliers.	
	27th Bombay, Lt. Infantry.	Rajkot, Bhuj, Deesa. }
	28th Bombay Rifles.	
		Poona 2, Kirkee, Satara. 4
		Mhow 2, Ahmednagar, Aurangabad.

The Bombay Marine ... Bombay, Aden, Karachi.

8th Madras Division.	29th Madras Infantry.	Madras, Vizianagram, Berhampur.
	30th Madras Infantry.	
	31st Madras Infantry.	Trichinopoly 2, Cannanore, Quilon.
	32nd Madras Infantry.	
	The Madras Pioneers.	Secunderabad 2, Raichore, Bellary.
		Bangalore 2, Belgaum 2.

The Madras Sappers and Miners.

Eastern Army.

Artillery.

9th, 10th, 11th, 12th, Burmah Mountain batteries.

<i>Divisions.</i>	<i>Infantry Regiments.</i>	<i>Stations.</i>
9th Burmah Division.	33rd Burmah Infantry.	Myingyan, Thayetmyo, Moulmein, Rangoon 2, Mandalay, 2, Meiktila, Ft. Stedman, Bhamo.
	34th " "	
	35th " "	
	36th " "	
10th Assam Division.	37th Khas Gurkha Rifles.	Kohima, Manipur, Shillong, Khaitamabi, Silchar, Tiddim, Haka, Kalewa, Falam.
	38th Gurkha " "	
	39th Garhwal " "	

The Burmah Sappers and Miners.

Regiments of the Future.

40th Gurkha Rifles, formed from the Mogaung, Myitkyina, Naga Hills, Lakhimpur, and Surmah Valley Military Police battalions of Burmah and Assam.

The Punjab Pioneers, raised for service in the Quetta District and recruited from Hazaras of the Hazarajat (it they can be got to enlist) Punjabi Mahomedans and Border Tribesmen.

The Hindustani Pioneers for the Army of Hindustan.

The Burmah Pioneers for the Eastern Army.

The Duties of the Armies of India.

It has been said that "an army exists for war and for war alone, it does not exist to maintain the authority of any government whatsoever, in its own country, over its own subjects".⁽¹⁾ This, however true of most armies, is, perhaps, not the only *raison*

The maintenance of the authority of the Indian Government. *d'être* of the army of India. "At first sight, bayonets and red-coats do not appear to be precisely the instruments of government which a philanthopist would advocate, but, we belie or deceive, ourselves when we declare or fancy, that our government is maintained otherwise than by the sword."⁽²⁾ We must "admit to the full that a complete and efficient military organization, is the base and foundation of our power here".⁽³⁾ Hence it is, that the duties of the Indian Army comprise, not only the defence of the country itself and the protection of its interests against foreign aggression, but also the preservation of its internal repose, or, in other words, the maintenance of the authority of the Indian "Government, in its own country, over its own subjects."

Defence against foreign aggression

The preservation of internal repose.

We may, therefore, at first consider these two duties separately, and organize one portion of the army for action, if necessary, beyond our frontiers, and the other for the preservation of good order in the country itself.

¹ Col. Maitland, Bo. S. C. Sir H. Lawrence. ² Lord Mayo.

The forces available for the former office are entirely dependent on the requirements of the latter, which again are considerably dependent on the quality and quantity of our means of communication and the political condition of the country at any given time, besides the efficiency of the troops themselves and the perfection of their organization for the purpose in view. From which it is obvious that the requirements of the latter will not be quite constant.

The forces available to meet foreign aggression, depend upon requirements of the country itself.

Secondly, to meet the fluctuating necessities of the country itself, and to permit of the deployment of the whole might of the Empire in its defence, should an emergency demand it, we must combine the two organizations in a single system.

Necessity of organizing the Indian Army upon a single system.

Thirdly the whole system of the organization of the Indian Army, must be such as to permit of its perfect co-operation with the English forces in the field.

Necessity of organizing the Indian Army to permit of its proper cooperation with Home Army.

India is secured against foreign aggression in most directions by the sea and by an impassible mountain system, and it is only to the land frontiers, to the North West and E. of the Empire, that our thoughts need principally be turned. The forces, in other portions of the empire, may be organized, mainly for the preservation of internal repose, but, the troops, in the Punjab and Burmah, must be prepared to defend their respective frontiers against foreign aggression as well.

The forces of the Punjab and Burmah only required to meet foreign aggression.

Since defence against external enemies not only implies the defence of the actual soil of a country, but, the protection of its interests abroad and since the defence of a country itself is only to be effected by meeting attack with attack, it is necessary to organize that portion of the Indian Army destined to oppose foreign aggression, in such a manner, as to enable a certain force to take the field, at any reasonable distance from its main base of operations, with its lines of communication adequately guarded.

Such a force destined, perhaps, to meet its enemy at a distance from the country itself, must labour under many disadvantages; composed of men of many races, it must necessarily lack that perfect cohesion to which homogeneity is essential; the paucity of highly trained and educated officers, in more than half its combatant units, must make the leading something less than perfect; and it must

The weak points of an Indian Army.

of many races, it must necessarily lack that perfect cohesion to which homogeneity is essential; the paucity of highly trained and educated officers, in more than half its combatant units, must make the leading something less than perfect; and it must

always be prepared to meet superior numbers. How supremely important does it, therefore, appear to make that force, humanly speaking, perfectly efficient in all other points and to render it capable of the most rapid mobilization.

Extraordinary efficiency and power of rapid mobilization necessary to counterbalance them.

As has been shown, it is impossible for an army to be really efficient, unless its peace organization is precisely the same as its war organization, not only must the organization of its higher units be perfect, but, its subsidiary organizations must be complete

Units not as a rule subject to relief.

as a rule, be subject to relief or substitution and must be able to complete themselves for war from their own resources, which implies that every unit intended for immediate

High peace establishments necessary.

service, which has either no reserves, or none in the country, must stand at so high a peace strength and always have in its ranks such a proportion of men of all ages physically fit for war, as to be at all times in the position which continental troops only attain to on the incorporation of their reserves.

"A number of isolated units, scattered over a country, are no more an army, than a number of armed men, scattered about a district, can be called a regiment," (4) and if the country

is to be liable to have withdrawn from it, in war, a large number of troops, it might be advisable to collect the "first line" corps

in a few garrisons in peace, lest the seeming military denudation of the country in war should tempt the disloyal to create disorders, which, however promptly repressed, could scarcely fail to hamper the free action of the troops in the field.

Suggested distribution of the troops of the first line.

FIRST ARMY CORPS.

Peshawar.	Rawal Pindi.	Sialkot.	Mian Mir.
	1st CAVALRY DIVISION.		
	2nd Cavalry Brigade	1st Cavalry Brigade.	
	A Hussar Regiment.	A Dragoon Guard Regiment.	
	4th Sikh Cavalry.	1st Sikh Cavalry.	
	Cavalry of Corps of Guides.	19th Ranghur Cavalry.	
	6th Troop R. H. A.	5th Troop R. H. A.	

(4) Colonel Maitland. Bo. S. C.

Suggested distribution of the troops of the first line.—Contd.
FIRST ARMY CORPS.—Continued.

Peshawar.	Rawal Pindi.	Sialkot.	Mian Mir.
2ND 4th Infantry Brigade 5th Bttn., 7th Brit. Inf. Brig. 1st Bttn., 7th Sikhs. 5th Bttn., 8th Brit. Inf. Brig. 1st Bttn., 8th Sikhs.	DIVISION. 3rd Infy. Brigade. 5th Bttn. 5th Brit. Infy. Brig. 1st Bttn., 5th Sikhs. 5th Bttn., 6th Brit. Inf. Brig. 1st Bttn. 6th Sikhs	1ST 2nd Inf. Brigade. 5th Bttn. 3rd Brit. Inf. Brig. 1st Bttn., 3rd Gur- khas. 5th Bttn., 4th Brit Inf. Brig. 1st Bttn., 4th Gur- khas.	DIVISION. 1st Inf. Brigade 5th Bttn. Rifles, Brit. Inf. 1st Bttn., 1st Gur- khas. 5th Bttn., 2nd Brit Inf. Brig. 1st Bttn., 2nd Gur- khas.
Divisional 29th Btry. R. Div. Arty. 20th Btry., R. Div. Arty.	Artillery. 21st Btry. R. Div. Arty. 22nd Btry. R. Div. Arty.	Divisional 13th Btry., R. Div. Arty. 14th Btry. R. Div. Arty.	Artillery. 5th Btry., R. Div. Arty. 6th Btry., R. Div. Arty.
15th Btry., R. Corps Arty.	Corps 11th Btry. R. Corps Arty. 1st Bttn. Corps of Guides.	Troops. 7th Btry., R. Corps Arty. 1st Bttn. Sikh Pio- neers	3rd Btry., R. Corps Arty.

SECOND ARMY CORPS.

Quetta.	Meerut.	Umballa.
	DIVISION. 3rd Cavalry Brigade. A Lancer Regiment. 7th Punjab Cavalry. 13th Dogra Cavalry. 7th Troop, R. H. A.	
2ND CAVALRY 4th Cavalry Brigade. A Hussar Regiment 10th Punjab Caval- ry. 16th Jat Cavalry. 8th Troop, R. H. A.		
4TH 8th Infantry Brigade 5th Bttn. 15th Brit. Inf. Brig. 1st Bttn., 15th Pun- jab Inf. 5th Bttn. 16th Brit. Inf. Brig. 1st Bttn. 16th Ba- luch Inf.	DIVISION. 6th Inf. Brigade. 5th Bttn., 11th Brit. Inf. Brig. 1st Bttn., 11th Dogra L. I. 5th Bttn. 12th Brit Inf. Brigade. 1st Bttn., 12th Dogra L. I.	DIVISION. 5th Inf Brigade. 5th Bttn. 9th Brit Inf. Brig. 1st Battn., 9th Sikh L. I. 5th Bttn. 10th Brit Inf. Brig. 1st Bttn. 10th Khattak L. I.
Divisional 61st Btry., R. Div. Arty. 62nd Btry., R. Div. Arty.	Artillery. 53rd Btry. R. Div. Arty. 54th Btry., R. Div. Arty.	Divisional 45th Btry. R. Div. Arty. 46th Btry., R. Div. Arty.
31st Btry. R. Corps Arty.	Corps 27th Btry. R. Corps Arty. 2nd Bttn. Corps of Guides.	Troops. 23rd Btry. R. Corps Arty. 2nd Bttn., Sikh Pio- neers.
		Artillery. 37th Btry., R. Div. Arty. 38th Btry. R. Div. Arty.
		19th Btry. R. Corps Arty.

The foregoing table suggests the quartering of a brigade of infantry, 1 corps and 2 divisional batteries (from the same territorial division) of artillery at Mian Mir, Sialkot, Rawalpindi, Peshawar, Umballa, and Meerut, a battalion of Sikh Pioneers at Sialkot and one at Meerut, a battalion of the Guides at Pindi and one at Quetta, a whole division of infantry and 2 corps and 4 divisional batteries of artillery at Quetta, a whole division of infantry, 2 corps and 4 divisional batteries of artillery at Quetta, a cavalry brigade at Sialkot, Pindi, Meerut and Quetta. This would imply the transference of a regiment of British cavalry from Umballa to Quetta and a very considerable increase in the number of troops in the latter station. The troops from Mian Mir and Sialkot should be moved up to Dharmasala and into the Kashmir hills for the summer; those from Pindi and Peshawar to Thoba, the Gullies and the hills about Murree; those from Meerut to Landour and the hills about Mussoorie and those from Umballa to Jutogh, Dagshai and the hills about Simla. With mountains attaining a height of 11,000 feet in its vicinity there should be no difficulty about finding a summer resort near Quetta. It is not meant that troops should be quartered in Quetta itself, the neighbourhood of Khelat, apparently, offers ample space for the cantonments or an encampment of a large body of troops and its climatic conditions are stated to be favorable all the year round.

Besides these troops there must exist at these stations the necessary detachments of Sappers and Miners; transport, commissariat, medical and other subsidiary organizations, brigade, divisional and army corps staffs, stores and equipment, everything in fact to enable these troops to leave their stations within 6 to 12 hours of receiving the order to Mobilize. If in addition there be attached to each division of infantry 2 squadrons of Native or Imperial Service Cavalry, say 1 squadron of each, on mobilization, Indian divisions and army corps in the field with the exception of the attached Pioneer battalions of the latter, will be exactly similar to the organizations of the home army.

If it be considered undesirable for corps to remain always in the same stations, relief may be effected by the exchange of quarters between whole "commands." It would be necessary to the efficiency of these organizations that their units should not be subject to *periodic relief*, to go further and make them *permanencies*, would tend to damage the morale of other corps. Under existing circumstances, the chance of a unit being included in the first line, depends, almost entirely, upon where it is quartered; once having left a station, whose troops are included in the 1st or IInd army corps, there is small probability of its regaining that envied position, for some

Reliefs if necessary to be effected by whole divisions.

Units not to be subject to periodic relief.

time to come. To let it be known, however, that a unit incorporated in the 1st or 2nd army corps would not be relieved, until it should be surpassed in efficiency, by another unit of the same "group," would ensure that every corps would strive, either to maintain its position, or to supplant its fellow.

Distribution of other troops.

The distribution of the corps not included in the "mobilized" forces, should be effected with the object

<p>Other corps to provide</p> <p>(1) additional troops for the field army.</p> <p>(2) troops for the lines of communication and</p> <p>(3) to preserve the internal repose of the country itself.</p>	<p>(1) of providing additional troops for the field, to serve either in the fighting line or on the lines of communication and (2) of maintaining the internal repose of the country during the prosecution of a great war.</p>
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We have one dragoon guard, one lancer and two hussar regiments for distribution between Lucknow, Secunderabad, Mhow and Bangalore, 8 corps (one from each territorial division) 16 divisional (two from each territorial division) and 16 mountain (8 British and 8 Native) batteries of artillery and 32 battalions of British infantry (2 of each Rifles and Line Brigade) for distribution throughout India Proper and subject to periodic relief in India.

Of the Punjab army we have 2 battalions of each of the four Gurkha Regiments distributed between Lansdowne, Bakloh, Dehra Dun and Abbottabad, 2 battalions of the 9th, 10th & 11th, "groups" of Native infantry for service on the northern portion of the frontier, 2 battalions of the 15th and 16th "groups" Native infantry for service on the southern portion of the frontier and Sindh, and 2 battalions of the 5th, 6th, 7th 8th, 12th, 13th, and 14th groups and a battalion of Sikh Pioneers for service any where in the Punjab or on the frontier as required. Also 4 Sikh, 4 Punjabi and 1 Dogra-Rajput regiments of Native cavalry, 4 for service on the frontier and 5 wherever required on the frontier or in the Panjab. While there would always be, under ordinary circumstances, a battalion of the Guides at Mardan.

The distribution of the other regiments of cavalry and battalions of infantry of the armies of Hindustan and the Deccan and the organization of brigade and divisional districts has been already suggested in the list of regiments and column of "stations" given on previous pages. It is only necessary to remark that the reduction of the number of Madras battalions at Secunderabad, from 4 to 2, is partly made good by apportioning 2 battalions of the central India Division to Bolarum. The troops, quartered at these two places, would include one British and 2 Native regiments of cavalry and 2 British and 4 Native battalions of infantry, besides artillery, practically in one station.

The reduction of battalions of Native Infantry at Bombay and Madras, from 2 to 1, would, surely, not matter much; the battalion quartered at each place would not be withdrawn, on the outbreak of war, and the presence of a considerable force of volunteers and of such British battalions, as may be apportioned to them, should be sufficient for their protection in war.

And this suggests the question of the volunteers. Situated as India is, with frontiers practically coterminous with those of the possessions of European nations, she would be as equally justified as any power of Continental Europe, in enforcing conscription. Such a step however, is not, for obvious reasons, to be dreamed of, either in the case of the Native of the country or the non-military European resident, but the law of the land might require—what, probably, no reasonable man would object to—that, every physically fit, non-military European resident, under the age of 40, being a born or naturalized British subject, should, with certain exceptions, serve in the volunteers and become “an efficient” within a stated time. Such a law would not be intended to inflict hardship, or even real inconvenience on anyone. There are, however, many in the big cities and towns, who lack the necessary patriotism, do not think it necessary, or are too selfishly lazy to do anything towards defending their country’s possessions and their own lives and property, who might very well be required to join the volunteers and so set free more highly trained men to meet an enemy more formidable than the malcontents of the country.

Mobilization for Minor Campaigns.

The Indian contingent for minor campaigns would not be required to exceed 4 regiments of Native cavalry (2 from Hindustan and 2 from the Deccan ?), 4 (corps ?) batteries of artillery and 16 battalions (1 from each of the 17th to 32nd groups) of Native infantry.

Mobilization of the Indian Army. 1st Line.

Units.	Total strength.	Service.	Depot.
British Cavalry Regts.	750 men with the colors. 250 reservists from home.	600 ...	150
			250
			400
British Infantry Battns.	1250 actives (including 350 old soldiers of the brigade special company) 250 (in time 375) reserves.	1000 ...	250
			250
			500
Native Cavalry Regts.	789 men ...	600	189
Native Infantry Battns.	912 actives, 236 reserves.	1000	148

N. B.—on mobilization the unfit and superfluous men of the 4 troops of horse artillery would be gathered in one depot.

The unfit and superfluous men of the 1 corps and 2 divisional batteries of each territorial division of artillery would be gathered in one divisional depot.

The unfit and superfluous men of the Guides Cavalry and Infantry would be gathered in one depot at Mardan.

The unfit and superfluous men of the Sikh Pioneers would be gathered at one depot at Mian Mir.

One regiment (the 22nd Hindustanis?) of the 8th Native cavalry brigade would take the field 600 strong, one squadron being attached to each infantry division and 189 men being left in depot at Pindi.

British cavalry regiments and infantry battalions would not wait for their reserves, these would be attached to their depots on their arrival in the country. Battalions of Native infantry would be made up to war strength as rapidly as possible either from their own reserves or from the other battalions of the same strength their depots being afterwards completed.

Mobilization of the 2nd Line.

To provide additional troops for the 1st line, to guard the lines of communication, or for detached duties.

Cavalry.

2nd Sikh Cavalry, 5th Sikh Cavalry, 8th Punjab Cavalry, 11th Panjab Cavalry, 25th Bombay Cavalry, 28th Madras Cavalry.

Artillery.

7th Battery R. Division Artillery, 15th Battery R. Division Artillery, 23rd Battery R. Division Artillery, 31st Battery R. Division Artillery, 39th Battery R. Division Artillery, 47th Battery R. Division Artillery, 55th Battery R. Division Artillery, 63rd Battery R. Division Artillery.

4th Battery R. Corps Artillery, 12th Battery R. Corps Artillery, 20th Battery R. Corps Artillery, 28th Battery R. Corps Artillery.

1st Battery R. Mountain Artillery, 3rd Battery R. Mountain Artillery, 5th Battery R. Mountain Artillery, 7th Battery R. Mountain Artillery.

1st Battery N. Mountain Artillery, 3rd Battery N. Mountain Artillery, 5th Battery N. Mountain Artillery, 7th Battery N. Mountain Artillery.

Infantry.

6 Battalions of the Rifles, 2nd to 16th groups of British infantry.

2nd battalions of the 1st to 16th Groups of Native infantry.

1st and 2nd Battalions of the Madras Pioneers.

The Mobilization of Native cavalry and infantry units would be the same as those of the 1st line troops.

British and Native mountain batteries would be completed for service from those not here included and transfer to them all unfit men.

Divisional and corps batteries, and battalions of British infantry might take the field without waiting for their reserves being completed afterwards, but, 8 British battalions could not cross the frontier, until the arrival of a corresponding number of battalions from England and the Mediterranean.

Each British battalion 900 strong on receiving 250 (in time 375) reservists would be completed to 1000 men for the field and leave 150 in depot.

*Mobilization of the 3rd Line.**For the preservation of Internal repose.*

Supposing that 8 additional battalions for India would be forthcoming on the outbreak of a great war they might be obtained by sending out to India the 4 Imperial battalions in the British Islands, 1 from Gibraltar, 2 from Malta and 1 from Egypt, sending 8 Native battalions, 2 to Gibraltar, 2 to Malta and 4 to Egypt.

Depots.

British Cavalry 4 Depots (viz. 1 Dragoon Guard, 1 Lancer and 2 Hussar) at Sialkot, Meerut, Pindi and Quetta.

Native Cavalry 5 Depots (viz. 1 Sikh, 1 Punjab, 1 Dogra-Rajput-Jat, 1 Ranghur-Hindustani Mahomedan and 1 Bombay-Madras) at Pindi, Quetta, Sialkot, Meerut and Secunderabad.

British Infantry 16 Depots (viz. 1 to each "group") at Mian-Mir 2, Sialkot 2, Pindi 2 Peshawar 2, Umballa 2, Meerut 2 and Quetta 4.

Horse Artillery 1 Depot at Quetta.

Corps and Divisional Artillery 8 Depots (viz 1 for each territorial Division of Artillery) at Mian Meer, Sialkot, Pindi, Peshawar, Umballa, Meerut, and Quetta 2.

British Mountain Artillery 2 Depots at Pindi and Quetta.

Native Mountain Artillery 2 Depots at Pindi and Quetta.

Native Infantry 1st to 32nd Groups 16 Depots (viz. 2 Gurkha, 2 Sikh, 1 Sikh Khattak, 1 Dogra, 2 Panjabis, 1 Brahmin-Rajput, 1 Jat-Rohilla, 1 Rajput, 1 Ranghur-Moghul, 2 Bombay and

2 Madras) at Mian Mir, Sialkot, Pindi, Peshawar, Umballa, Meerut, Quetta 2 Calcutta 2, Bolarum 2, Bombay, Poonah, Secunderabad and Madras.

Guides Depot, Mardan; Sikh Pioneers, Mian-Mir; Bombay Marines, Bombay; Madras Pioneers, Bangalore; (each with two battalions of 1000 men away and being composed of 3 battalions each of 912 actives and 236 reservists) Guides 189 cavalry 1444 infantry, the others 1444 infantry each.

Each British battalion in India would receive 250 reservists. Each Imperial Regiment would receive 500 reservists, supposing that the 8 battalions sent to India consisted of one from each regiment, the others not being required to take the field would require 100 men to bring them up to full war strength, the balance of 400 men might be apportioned to the battalions sent to India, on arrival, 1300 strong, each would divide its 500 unfit and superfluous men between 2 brigade depots.

Punjab Depots—Illustration Pindi.

Units.	Actives.	Reserves.	Mobilized.	Depot.
Hussar Regiment 1st Line ...	750	250	600	400
Hussar Regiment 3rd Line ...	750	250	600	400
				800
5th Bttn. 5th Brit. Inf. Brig. 1st Line.	1250	250	1000	500
6th " " " " 2nd Line.	900	250	1000	150
7th " " " " 3rd Line.	900	250	800	350
2 Superfluous men 3rd Imp. Regt.	...	...	...	250
				1250
5th, 6th, and 7th Bttns 6th Brit. { Inf. Brig. numbers as in 5th Brig. }	3050	750	2800	1,000
½ Superfluous men 3rd Imp. Regt.	...	...	...	250
				1,250
6 Battns of the 5th & 6th Sikh Inf.	5,472.	1,416.	5,600.	1,255
1st to 6th Sikh Cavalry.	4,734.	nil	3,600.	1,134

From depots of such strength it should be possible to put 2 squadrons of cavalry from each of the British and Native cavalry depots and a weak battalion from each of the British and Native infantry depots.

Army of Hindustan Depots.

A depot to every 6 battalions or 2 groups would be formed by one battalion in each group taking the field 1000 strong and 2 of 800 men leaving 1,688 men in the depot.

Army of the Deccan Depots.

A depot to every 6 battalions or 2 groups would be formed by the three battalions of each group taking the field 800 strong leaving 2,088 men in the depot.

Formations of 3rd Line.

For the Mediterranean.

1st Bttn. 17th Brahmins.	1st Bttn. 19th Rohillas.	1st Bttn. 21st Rajputs.	1st Bttn. 23rd Rajputs.
1st Bttn. 18th Rajputs.	1st Bttn. 20th Jats.	1st Bttn. 22nd Ranghurs.	1st Bttn. 24th Moghuls.

The N. W. Frontiers.

<i>20th Infantry Brigade.</i>	<i>19th Infantry Brigade.</i>	<i>18th Infantry Brigade.</i>	<i>17th Infantry Brigade.</i>
7th Bttn. 7th Brit. Inf. Brig.	7th Bttn. 5th Brit. Inf. Brig.	7th Bttn. 3rd Brit. Inf. Brig.	7th Bttn. Rif. Brit. Inf. Brigade.
3rd Bttn. 7th Sikhs.	3rd Bttn. 5th Sikhs.	3rd Bttn. 3rd Gurkhas.	3rd Bttn. 1st Gurkhas.
3rd Bttn. 8th Sikhs.	3rd Bttn. 6th Sikhs.	3rd Bttn. 4th Gurkhas.	3rd Bttn. 2nd Gurkhas.
1st Bttn. 28th Bombay Inf.	1st Bttn. 27th Bombay Inf.	1st Bttn. 26th Bombay Inf.	1st Bttn. 25th Bombay Inf.
4th Btry. N. Mont. Arty.	4th Btry. R. Mont. Arty.	2nd Batty. N. Mont. Arty.	2nd Btry. R. Mont. Arty.
23rd Rohilla Cavalry.	6th Sikh Cavalry.	20th Ranghur Cavalry.	3rd Sikh Cavalry.
<i>24th Infantry Brigade.</i>	<i>23rd Infantry Brigade.</i>	<i>22nd Infantry Brigade.</i>	<i>21st Infantry Brigade.</i>
7th Bttn. 15th Brit. Inf. Brig.	7th Bttn. 13th Brit. Inf. Brig.	7th Bttn. 11th Brit. Inf. Brig.	7th Bttn. 9th Brit. Inf. Brig.
3rd Bttn. 15th Punjabis.	3rd Bttn. 13th Punjabis.	3rd Bttn. 11th Dogra L. Inf.	3rd Bttn. 9th Sikh Lt. Inf.
3rd Bttn. 16th Baluchis.	3rd Bttn. 14th Punjabis.	3rd Bttn. 12th Dogra L. Inf.	3rd Bttn. 10th Khattak L. I.
1st Bttn. 32nd Madras Inf.	1st Bttn. 31st Madras Inf.	1st Bttn. 30th Madras Inf.	1st Bttn. 29th Madras Infy.
8th Btry. N. Mont. Arty.	8th Btry. R. Mont. Arty.	6th Btry. N. Mont. Arty.	6th Btry. R. Mont. Arty.
17th Jat Cavalry.	12th Punjab Cavalry.	14th Dogra Cavalry.	9th Punjab Cavalry.

The Punjab.

Peshawar.	Rawal Pindi.	Sialkot.	Mian Mir.
	2 Sqdns 1st Hussar Depot.	2 Sqdns. Dgn. Gd. Depot.	
	2 Sqdns. Sikh Cav. Depot.	1 Sqdn. Dogra Cav. 1 Sqdn. Jat Cav. }	Depot
	—	—	
7th Brit. Inf. Brig. Dep. Bttn.	5th Brit. Inf. Brig. Dep Bttn.	3rd Brit. Inf. Brig. Dep. Bttn.	Rifles. Brig. Dep. Bttn.
8th Brit. Inf. Brig. Dep. Bttn.	6th Brit. Inf. Brig. Dep. Bttn.	4th Brit. Inf. Brig. Dep. Bttn.	2nd Brit. Inf. Brig. Dep Bttn.
4th Sikh. Dep. Bttn	3rd Sikh. Dep. Bttn	2nd Gurkha Depot. Bttn.	1st Gurkha Dep. Bttn.
	—	—	
	16th Battery. R. Corps. Arty.	8th Bttry. R. Corps Arty.	
	Quetta.	Meerut.	Umballa.
	2 Sqdns. 2nd Hussar Depot.	2nd Sqdns. Lancer Depot.	
	2 Sqdns Punjab Cav. Depot.	1st Sqdn. Ranghura. 1st Sqdn. Hindustania. }	Depot
	—	—	
15th Brit. Inf. Brig. Dep. Bttn.	13th Brit. Inf. Brig. Dep. Bttn.	11th Brit. Inf. Brig. Dep. Bttn.	9th Brit. Inf. Brig. Dep. Bttn.
16th Brit. Inf. Brig. Dep. Bttn.	14th Brit. Inf. Brig. Dep. Bttn.	12th Brit. Inf. Brig. Dep. Bttn.	10th Brit. Inf. Brig. Dep. Bttn.
8th Punjab Inf. Dep Bttn.	7th Punjab Inf. Dep. Bttn.	6th Dogra Depot Bttn.	5th Sikh Khattak Dep. Bttn.
	—	—	
	32nd. Bttry, R. Corps Art.	24th Bttry. R. Corps Art	

Hindustan.

21st Ranghur Cavalry. The British Cav. 15th Rajput Cavalry.
Regt. from Lucknow.

7th Bttn. 8th Brit. Inf. Brig.	7th Bttn. 6th Brit. Inf. Brig.	7th Bttn. 4th Brit. Inf. Brig.	7th Bttn. 2nd Brit. Inf. Brig.
2nd Bttn. 20th Jat Infantry.	2nd Bttn. 19th Ro- hilla Inf.	2th Bttn. 18th Raj- put Inf.	2nd Bttn. 17th Brahmin Inf.
3rd Bttn. 20th Jat Infantry.	3rd Bttn. 19th Ro- hilla Inf.	3rd Battn. 18th Rajput. Inf.	3rd Bttn. 17th Brahmin Inf.
	16th Btty. R. Div. Arty.	8th Btty. R. Div. Arty.	

24th Moghul Cavalry. The British Caval- 18th Jat Cavalry.
ry Regt. from Se-
cunderabad.

7th Bttn. 16th Brit. Inf. Brig.	7th Bttn. 14th Brit. Inf. Brig.	7th Bttn. 12th Brit. Inf. Brig.	7th Bttn. 10th Brit. Inf. Brig.
2nd Bttn. 24th Mo- ghul Inf.	2nd Bttn. 23rd Raj- put. Inf.	2nd. Bttn. 22nd Ran- ghur Inf.	2nd Bttn. 21st Raj- put Inf.
3rd Bttn. 24th Mo- ghul Inf.	3rd Bttn. 23rd Raj- put Inf.	3rd Bttn. 22nd Ran. ghur. Inf.	3rd Bttn. 21st Raj- put Inf.
	32nd Btty. R. Div. Arty.	24th Btty. R. Div. Arty.	

The Deccan.

27th Bombay Cavalry The British Cavalry. 26th Bombay Cavalry.
Regt from Mhow.

1st Bttn. 4th Impe- rial.	1st Bttn. 3rd Impe- rial Regt.	1st Bttn. 2nd Im- perial Regt.	1st Bttn. 1st Im- perial Regt.
2nd Bttn. } 28th Bom- 2nd Bttn. } 27th	2nd Bttn. } Bom- 2nd Bttn. } 26th	2nd Bttn. } Bom- 2nd Bttn. } 25th	2nd Bttn. } Bom- 2nd Bttn. } 25th
3rd Bttn. } bayInf.	3rd Bttn. } bayInf.	3rd Bttn. } bayInf	3rd Bttn. } bayInf
	48th Btty. R. Div. Arty.	40th Btty. R. Div. Arty.	

30th Madras Cavalry, The British Cavalry 29th Madras Cavalry.
Regt. from Ban-
galore.

1st Bttn. 8th Impe- rial Regt.	1st Bttn. 7th Impe- rial Regt.	1st Bttn. 6th Impe- rial Regt.	1st Bttn. 5th Impe- rial Regt.
2nd Bttn. } 32nd Madras 2nd Bttn. } 31st	2nd Bttn. } Madras 2nd Bttn. } 30th	2nd Bttn. } Madras 2nd Bttn. } 29th	2nd Bttn. } Madras 2nd Bttn. } 29th
3rd Bttn. } Inf.	3rd Bttn. } Inf.	3rd Bttn. } Inf.	3rd Bttn. } Inf.
	64th Btty. R. Div. Art.	56th Btty. R. Div. Art.	

The scheme of reorganization put forward in these pages appears to the author to meet the requirements of the Empire and though, by no means the best conceivable, even to his understanding, the most we can hope for under present conditions.

Others have advocated the adoption of conscription in the British Islands, but, it does not appear to the author that our present army is too small but rather that it is too big, that its energy has been allowed to expend itself in numbers instead of efficiency. As has been said before, the possession of the most powerful army in the world would not save the country if the command of the seas were lost, for its bread is upon the waters and the destruction of the British Navy must entail the submission of the people. For all purposes short of meeting a regular invasion an efficient army, of the size advocated, appears sufficient—an army able to provide 125,000 combatants for field operations and the same number for the defence of places.

With India, however, it is a different matter, her frontiers are practically conterminous with those of powerful neighbours and it is impossible to cite one instance in which neighbouring powers have not, at some time or other, been engaged in hostilities. A frank recognition of her position and a manly endeavour to safeguard her, constitutes no threat, it is a duty and would be doing what others so situated have done.

Competent authorities declared, after the Mutiny, that India could never be safe with less than 80,000 British soldiers in the country and, it may fairly be said that, subsequent events have nearly doubled her requirements in that direction. Our means, however, and our needs must always limit our ambitions, we can only provide that our means shall realize their fullest value.

Roughly speaking India pays to England a million a year for the purchase of ordnance, stores and clothing, pay of regiments on voyage out and home and for sea transport charges and $\frac{1}{4}$ of a million for British recruits. The last sum the authors of "Imperial Defence" declare to be "simply a tribute paid by India to the War Office for the privilege of receiving British regiments on loan, at India's expense, from the moment they leave England until they are safely landed back again." If India were allowed to purchase her stores in the cheapest market, the periodic movement of complete units were abolished, a somewhat lengthened term of color's service in India were adopted and the "tribute" remitted, it would be possible to add 15,000 men to the British army in India without increasing the military budget.

The reforms advocated include the organization of higher units in peace, the provision of an elasticity in our organization which is necessary to enable it to meet the fluctuating requirements of the empire as a whole, without disturbing the

army organizations of its parts, and the reduction or abolition of unnecessary portions and the development of others.

In the Native army the reforms comprise, in addition, not necessarily the adoption of the "class regiment" system, but the class double company in the infantry and the class squadron in the cavalry.

In conclusion it must be remarked that the opinions and ideas contained in the foregoing pages are based upon the perusal of such literature as chances in the way of regimental officers, undertaken for pleasure and not for any specific purpose, and therefore, ill directed and wanting in system ; the notes that from time to time were made on that literature record in some instances the author's exact words, in others his general meaning, but in none his name, hence it is that some will find themselves misquoted, and others unacknowledged, to all such an apology is due and is humbly offered.

Present number and Designation.		Punjabi Mahomedans.
19th B. I.	...	2
22nd B. I.	...	3
24th B. I.	...	1
20th B. I.	...	1
21st B. I.	...	1
26th B. I.	...	...
25th B. I.	...	2
27th B. I.	...	2
28th B. I.	...	1
29th B. I.	...	2
30th B. I.	...	2
31st B. I.	...	2
Totals B. I.	18	
1st S. I.	...	1
3rd S. I.	...	1
4th S. I.	...	2
2nd S. I.	...	2
2nd P. I.	...	3
6th P. I.	...	1
1st P. I.	...	1
4th P. I.	...	2
5th P. I.	...	1
Guides	...	1
Totals P. F. F.	15	
Grand Totals	33	4

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6th B.L. ...	1
7th B.L. ...	1
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ON THE TACTICAL TRAINING IN DISTRICT CONCENTRATIONS BEST FITTED OF PREPARING THE ARMY OF INDIA FOR WAR.

(1) AGAINST A CIVILIZED ENEMY.

(2) AGAINST SAVAGE TRIBES IN MOUNTAIN AND JUNGLE WARFARE.

BY CAPTAIN W. G. HAMILTON, EAST LANCASHIRE REGIMENT.

(“ *Nihil Sine labore.*”)

“ On the tactical training in District Concentrations best fitted for preparing the Army of India for war”—

I.—For the proper consideration of this subject it is necessary to preface with a brief explanation of what is meant by “ District Concentrations.” Preliminary.
for, on this point the feasibility of any suggestions mainly turns. A District Concentration, then, is the concentration of troops of the Military District at a selected station within the District, usually the head-quarter station, for purposes of instruction. To the troops properly belonging to the District are frequently added corps moving in relief, and passing through at the time, or even available corps from neighbouring Districts. The number of troops attending a District Concentration varies from an Infantry Brigade to one or two Divisions, with Cavalry and Artillery more or less in proportion.

A fixed allotment of money is placed at the disposal of the General Officer Commanding, from which all expenses directly due to the District Concentration have to be met. This amount varies according to circumstances, but it may be taken for granted that it is only made sufficient for requirements by the exercise of a rigid economy. Herein then we have one of the main factors of militia-tion in carrying out tactical training at District Concentrations. The other main factor partly also dependent on the first—is time. The duration of a camp of instruction is usually one month. For various reasons, which are sufficiently apparent to make it unnecessary to discuss them here, this period is a suitable one and can be accepted without question. Excluding days of arrival and departure, Sunday and other rest days, this gives us a maximum of, say twenty five working days.

Considerations, therefore, of time and money must enter largely into the calculations of every officer entrusted with the arrangement of camp of instruction. The question which presents itself is—with a strictly limited amount of money, in a limited time,

NOTE.—This Essay was placed second in the Gold Medal competition for 1894.

what shall be the nature and extent of the tactical training of the troops assembled, and how shall this training be practically carried out? In brief—"what to teach, and how to teach it."

II.—Since strict economy in time and money are so essential

Time of year for if any practical results are to be achieved, a brief concentration. digression as to the time of year for camps of

instruction will not be out of place. The combined working of all arms under service conditions, being the keystone of any system of tactical training, should logically be carried out at the end of a progressive course of practical instruction. The climatic conditions of Europe enable the period of military activity to be brought to a fitting close in autumn when the weather is fine and the crops are off the ground; unfortunately it is otherwise with us in India. The hot weather and rains, whether spent in plains or hills, must be more or less a close season corresponding to the winter time in Europe. From the middle of October to the middle of March is, with a few limitations, the period of Military activity, the season for continuous out-door training.

The months of February or March should, therefore, logically speaking, be devoted to camps of instruction; but this cannot be. In Upper India the weather is still sufficiently cool but the crops are high, and movement of troops would be hopelessly cramped or the bill for damage enormous. In January the crops are not so serious a consideration, but in that month almost invariably occur the winter rains, which have killed or fatally crippled many a promising camp in the last few years. The objects of the concentration will best be attained if camps are held before the winter rains, that is any time between the middle of October and Christmas Day. The most suitable time is, then, the month ending about 15th December for the plains and rather earlier for the hills. The climate is then cool and dry, the ground is at its best for manœuvres, the *rabi* crops being either not up or just springing, and no harm to speak of is done even by guns or cavalry. All minor damages are speedily rectified when the rain falls soon after.

To hold a camp any time after the 1st January, is to court failure, to risk without adequate gain the loss of hard-got money and still more valuable time. The opportunities for combined tactical training are few and fleeting. Every day of the short available time must be occupied, every penny spent must yield a tangible result, thus, and thus only can district concentrations justify their existence as practical schools of instruction in war.

III.—We can assume that a District Concentration has, then,

Extent of tactical been fixed at a suitable time and that concentration training possible. quently we can reckon on 20 to 25 working days. That also a sufficient allotment has been made to enable the

troops to be in standing camp for part of the time and perhaps to manœuvre away from Contonments for a week or so. Funds will seldom admit of more than this, but if the training of the troops before and during the Camp is carried out carefully, thoroughly, and above all systematically, the opportunities for instruction will be numerous and valuable. It is no use speculating on what might or might not be done with unlimited funds, when it can be shown that the highest possible value in tactical and general training for war has been got out of the money under existing conditions, (and experience scarcely warrants such a conclusion at present) it may be time to put forward a more ambitious annual programme. Until then we must cut our coat according to the cloth.

Time, as we have seen, is limited. It is impossible, even if it were desirable, to impart to the troops instruction or training—in any sense of the word—in the whole series of practical exercises, termed tactical, or the art of handling troops in the field. The camp of instruction is the college, not the preparatory school. It is not the time for teaching the battalion, the battery, or the cavalry regiment, the drill and tactics of their several arms. To this extent the troops should be perfect, or they cannot derive the full benefits of the higher training which the District Concentration is intended to afford.

It may be desirable to give troops from the hills or elsewhere a little preliminary training in working under the conditions of the plains, and *vice versa*, but such period should if possible be preliminary and extra to the regular District Concentration. Doubtless at the camp there will be many opportunities, and most valuable opportunities, of applying practically what has been learnt previously, but it must be remembered, that the Camp is the time for testing not for acquiring elementary knowledge. We may go even farther than this. We may reasonably expect to find among officers and men a certain proficiency in more extended practical work than can be acquired on the parade ground only. For troops are seldom now-a-days cantoned in isolated stations, but for the most part in brigades, consisting of troops of all arms, handy and useful commands, possessing a capability for useful training which should not be lost sight of. Cavalry and Artillery have their special camps of instruction, in the special duties of the arm. The march of corps to the camp affords opportunities for practical minor tactics of all kinds. Outpost, reconnoitring, advance and rear guard work, all these can be practised frequently. To enable this to be done carefully and thoroughly, without harassing the men, it is very advisable to allow at least one halt a week in addition to Sundays. The slight extra expense, debitable to the Camp allotment, would be fully justified by results. The time of year

is no such thing," say he "as an Independent Cavalry, but there is divisional cavalry, there is a cavalry of the Army Corps, and there is a cavalry of the army."* There is no overlooking here of the value of the cavalry on the battle field, either opposed to cavalry or to the other arms, but there is a distinct reminder that all action of cavalry must be subservient to the common interest at stake, and that independent action, unconnected with the general aim in view, is almost as bad as absolute inaction.

VI.—The *Times* military correspondent, in his able series of letters on the German manœuvres of last year, ascribes, in the opening letter, the success of the Germans in 1870 very largely to their knowledge of how to use their men in combination, as opposed to the ignorance of the French Commanders in this respect, and lays great stress on the fact that combination among all ranks, and among all arms, is the keynote of German strategy and tactics of the present day.† While far from desiring a lavish imitation of German tactics and German methods, still I think we have something to learn in the thorough, systematic, and progressive way in which the German training is carried out. The several arms having been thoroughly grounded during May, June and July, in their special tactics, by a progressive series of 80 to 100 tactical exercises, the three arms are, during the manœuvre period invariably worked together progressively, first a regiment (3 battalions) with Cavalry and guns and so on to an Army Corps. Cavalry are combined with infantry on outpost duty, ten cavalry men to each outpost company, two troopers to each picquet, while for general work a few cavalry are attached to each battalion. Such subdivision may not be even desirable with our comparatively small, and hence comparatively more valuable, force of cavalry but the principle underlying the system is well worthy of imitation.

VII.—Bearing in mind, then that in all our work at the camp the tactical training of the three arms in combination, and speaking generally mutual co-operation in the widest acceptance of the term, is the main object to be attained, let us consider we should and can teach to prepare the troops for war. I with the question in the first instance as it affects war against a civilized enemy, considering later questions should be introduced in the general plan in training for war against savage tribes.

tactical instruction to meet a civilized enemy is. It comprises every subject connected with its—in, or preparatory to, action, and as these

* Quoted in *A. and N. Gazette*, 7-10-93.

September 1893,—October and November.

when instructional camps must, as we have seen, be held, is perhaps somewhat early in the season from an instructional point of view, nevertheless, if the best use is made of such opportunities as there are in the hot weather, and if the month of cold weather immediately preceding the camps is used for systematic preliminary training, the troops should join the camp ready to receive the sort of training which it is the subject of this essay to explain.

IV.—The main object of a District Concentration should be

Principal object of the tactical training of the various arms in District Concentrations. combination, and generally a training in mutual co-operation between every unit engaged. There are other subsidiary advantages gained by concentrating troops together, under the General's eye, and in association with each other, but tactical training for war must be the principal object, a training which shall benefit all arms and all ranks. It is a principle to be hammered into everyone that co-operation is essential to success, that a force of any kind is like a polo or football team. As every player has his special place in the game, and must play for the side and not for his own hand, so also the cavalry, and artillery and the infantry of a force co-operate and play into each others hands if the game of war is to be won. This co-operation is the more essential against a European enemy who plays the game, but even against a savage and unskilled opponent, unable perhaps to take advantage of our mistakes, it will not be disputed that combined action is a necessity to real success.

V.—A tactical unison between all arms of the service must

Present shortcomings. then be the keynote of the training at a District Concentration. It is a point which, theoretically admitted, is all too seldom practised, and it requires constant practice. The few customary days of combined work are sufficient only to show where the weakness lies, not to remedy it. The remarks of Sir Evelyn Wood on the action of the Cavalry in the Wiltshire Summer Manœuvres of 1893, seem to have a familiar sound. The Cavalry are noted here as "always having battles on their own account, the Infantry and the General Commanding getting little or vague information." The want of co-operation between Cavalry was also commented on. Such faults arise solely from want of practice in working with other arms from the beginning. Unless a cavalry squadron has learnt how to co-operate with an infantry battalion, a Cavalry Division will never know how to co-operate with an Army Corps. And in our service the Division and Army Corps will probably find themselves thrown together for the first time when in the actual presence of the enemy. A saying of General Billot, when criticising the French manœuvres of last year, is well worthy of record. "There

is no such thing," say he "as an Independent Cavalry, but there is divisional cavalry, there is a cavalry of the Army Corps, and there is a cavalry of the army."* There is no overlooking here of the value of the cavalry on the battle field, either opposed to cavalry or to the other arms, but there is a distinct reminder that all action of cavalry must be subservient to the common interest at stake, and that independent action, unconnected with the general aim in view, is almost as bad as absolute inaction.

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VII.—Bearing in mind, then that in all our work at the camp the tactical training of the three arms in combination, and speaking generally mutual co-operation in the widest acceptance of the term, is the main object to be attained, let us consider first what we should and can teach to prepare the troops for war. We will deal with the question in the first instance as it affects preparation for war against a civilized enemy, considering later what modifications should be introduced in the general plan in the case of training for war against savage tribes.

The range of tactical instruction to meet a civilized enemy is not difficult to define. It comprises every subject connected with the handling of troops in, or preparatory to, action, and as these

* "Progrès Militaire." Quoted in *A. and N. Gazette*, 7-10-93.

† "The Times." 11th September 1893,—October and November.

subjects are dealt with in every treatise on tactics, re-iteration is unnecessary. All such treatises whether by English or foreign authors almost without exception pre-suppose a civilized enemy armed with modern arms of precision. The difficulty is scarcely what to teach, but what not to teach. What to practise during the few available days of the District Camp, and what of necessity to assume as already learnt. We must take it for granted that battalions, batteries, and cavalry regiments have been carefully and practically grounded in the tactics of their special arm. From this point, instruction at the District Concentration will begin.

Day by day, then, in a systematically graduated course, the troops should be worked in combination, carrying out definite tactical exercises. Such training must be built up gradually from the foundation.

Unless this is done the tactical combination of the three arms will, when put to practical test, be found of that unsound and incoherent nature too often manifested at present.

First instructional period.

VIII.—The days of the camp should therefore be taken up with exercises somewhat as follows:—

$\frac{1}{2}$ Troop cavalry, and 2 Companies infantry v. the same.

ditto. ... 2 Companies infantry v. 2 companies infantry and 2 guns.

1 Troop Cavalry. $\frac{1}{2}$ Battalion $\frac{1}{2}$ Battalion v. the same.

1 Squadron Cavalry, 1 Battalion $1\frac{1}{2}$ Battalion v. the same.

Many similar combinations, will present themselves and the various exercises that can be carried out by such forces are endless.

Thus far may, for convenience, be termed "The first instructional period."

It might last five to seven working days, and should include the execution by night of two or three tactical exercises, or the execution of preparatory movements at night. As far as possible each little force should be complete in itself and frequently manœuvre with signallers, medical arrangements, reserve ammunition, and occasionally even with its light baggage represented by the number of transport animals required to convey it.

IX. —For instructional purposes the first period is the most important one, and it should not be curtailed. Advantages of small combinations at first. If the duration of the camp is less than anticipated, the latter portion, but not the beginning, is the part to cut short. The reasons why the first period, as suggested, is so important are because with small forces:—

(I) Instruction of all kinds is more easily imparted to a small than to a large number. The supervision can be thorough and mistakes can be seen and corrected.

(2) A complete tactical exercise can be worked out under service conditions, within the limits of a drill. More than this ; several tactical exercises can be worked out consecutively without covering too much ground, or over-fatiguing the men.

(3). Every man of the force can be actively engaged in tactical exercise, *i. e.*, every man has an opportunity of learning something practical. With larger forces some portion, of necessity, will not be engaged, and it frequently happens that more than half the force knows nothing of what is going on.

(4). Comparatively junior officers get plenty of practice in commanding mixed forces, and all ranks have opportunities of watching and learning something about the tactics of arms other than their own.

The recent introduction of examinations in this subject for senior Officers indicates what is expected, and no proficiency or self confidence can be expected without frequent opportunities for practice.

X. From the first period we pass on progressively to a second instructional period, in which the combinations can be stronger, but the instruction is still under the brigadier. For instance, if the mixed brigade consist of four battalions of Infantry, one or two batteries of artillery and a regiment of Cavalry a large number of tactical exercises can be carried out with varied combinations on either side. Five days and one night or so might be devoted to this period. Later on, complete brigades (mixed Brigades) should oppose each other, for say five days, and this we may term the third and last instructional period. The most suitable method of camping the troops, for convenience of tactical instruction, is discussed later. It is a question of considerable importance when so much instruction is to be got through in a limited time.

It must be borne in mind that it is simply for convenience of classification that the time of the camp is divided into several "periods." Each period follows the other without a break in logical sequence, but it is convenient for several reasons to divide the camp period in some such way. The latter periods give practice in command to more senior officers, and further practice to subordinates and troops. The latter, however, will now have longer marches and less fighting, they will have a foretaste of the real hardship of war, when weeks of hard work may or may not end in a fight. They have fewer opportunities of practice in actual tactics but more perhaps in other subjects of a soldier's training, equally important with tactics but beside the present consideration.

XI.—If money permits, the final time at the camp is best occupied in "out manœuvres" when part of the troops are pitted against the other. They will play the game of war, under service conditions, under a general idea, modified as circumstances require, with as free a hand as possible to manœuvre anywhere, and to do anything to gain their end. This is the final examination as it were for all engaged in the camp, for commanders and for men, when the value of the previous three weeks, instruction is put to the test. A short campaign like this based on a practical scheme which will entail the maximum actual fighting without binding commanders too rigidly to any fixed line of action, stimulates and interests all ranks. It is extremely desirable to maintain his interest by letting every one know as far as is possible, what has been done and what will be done every day, for some will often be out of the hunt altogether, and others will see part but fail to grasp the whole situation.

Out manœuvres are so good a training in many ways to so many persons,—and perhaps especially to the staff—that it would be a thousand pities to abandon them. But, if time or money are deficient, it is this final portion which must be curtailed. The instructional periods are all too short, as it is, and cannot bear reduction.

XII.—It is of no practical value I think, to give in detail Summary of proposals. here a hypothetical diary for a District Concentration, explaining in detail what exercises might be carried out daily. So long as the principle is maintained that instruction must be systematic, progressive, and based on the necessity of combined tactical action, the arrangement of detail is comparatively unimportant.

The following, however, is a brief summary of the proposal suggested above of the occupation of the time available by a progressive course of tactical instruction. Even here the exact number of working days available is of course liable to modification, and in the event of want of time or money the latter periods might have to be shortened. In addition to Sundays one other day of rest in the week is allowed. This is necessary if the troops are worked steadily five days a week with some night work thrown in. Rest days must be complete rest days for men and horses—they are not intended as days for private drill by over zealous commanders.

Periods.	Working days.	APPROXIMATE.		
		<i>Number of tactical exercises carried out by every man,</i>		
		By day	By night	Total
1st Instructional Period	5	12	3	15
2nd Do.	5	10	2	12
3rd Do.	5	5	1	6
	15	27	6	33
Out manœuvres	5			
Miscellaneous. i.e. Field Firing, March past etc :	3			
Rest days including Sundays	7			
Total duration of Camp.	30 days.			

XIII.—There are several points which should, I think, be briefly touched on here. They are not however peculiar to District Concentrations but are common to all manœuvres or practical exercises, and for this reason may seem perhaps beyond the scope of this essay. But being especially applicable to the case of a purely instructional camp, such as we are now considering, reference to them seems certainly desirable—

(1) A clear simple general idea should be issued previously, and immediately after each tactical exercise has been performed, remarks and criticisms on it should be made verbally on the ground by an officer appointed as umpire or critic. The exercises should be discussed and done with, while the details are yet fresh in the minds of critic and audience.

It will be seen what an important part that of critic is in imparting instruction. Needless to say he must be a senior officer whose opinion will carry weight.

In issuing the idea for the tactical exercise all elaboration should be avoided. It should be given out at the time and not long before as is often done. The conditions which bring about a fight are simple. It is merely necessary to state a case, leaving the

opposing sides to work it out to its natural conclusion, which should be unmistakable. The conditions of ground, time of day &c., should be taken to be exactly as they are. Nothing if possible should be left to the imagination. It is seldom necessary under Indian camp conditions, and always confusing.

(2). Undue interference with the several arms in their special tactical action is undesirable, provided that no flagrant errors are committed and the whole force works together. This latter is an essential. For instance, cavalry in their special line should not be too hampered or checked. Better rashness than irresolution for cavalry. "It is dangerous" says the *Progrès Militaire* in discussing the French manoeuvres of 1893—"It is dangerous to discourage cavalry by taking from them their desire to try." Connected with this is the subject of putting out of action. Happily the mimic slaughter is not so comprehensively destructive as it was a few years ago, but even now a battalion or a squadron has been known to lose more men out of action from a few hurried volleys than would probably have fallen in a long campaign. It is without doubt desirable to indicate reasonable losses and so to accustom officers and men to a state of things which they must meet in war. Casualties however to be natural should be more or less indiscriminate. To put out of action whole definite units, or parts thereof, as * is at present inculcated, destroys verisimilitude and with it such teaching as the representation of losses can be expected to convey. The remaining units go on unaffected, there is no transfer of commands and no risk of consequent confusion, and it will always be remembered that every man out of action loses to a greater or less extent the very tactical training he has marched miles to gain. What is more, the victims, however just their fate, lose heart and interest in the work. Certainly in all instructional work the troops should all carry the idea through, men adjudged out of action (casualties) forming a reserve line or otherwise brought into action. Mistakes made can be explained afterwards.

(3) All tactical exercises should be carried out whenever possible against an actual enemy. Marked positions for attack are to be avoided, skeleton enemies only suffered for want of sufficient troops to form an opposing side, and at a District Concentration this can seldom be the case. There is nothing like a good active opponent for sharpening a man's wits; not only of the commander, but of every man engaged. A skeleton has many disadvantages, above all he is a notoriously poor fighter, a mere tactical, "Aunt Sally," of slight value as the representative of a civilized enemy. I think

* This appears to be the meaning of the somewhat enigmatical sentence in Infantry Drill 1883, Page 254, P. 12. The practice of "Casualties" as part of the drill for attack, has disappeared from regulations, with that drill. It is, however, still optionally retained by many Commanding Officers.

too that in the majority of cases both sides should be approximately equal in strength. This will often lead doubtless to indecisive engagements, under present rules, but it will encourage the power of handling troops in, and manœuvring them preparatory to action, which bids fair to become a lost art. To take up a rigidly defensive position, or to avoid a fight on any terms, even when sides are almost equal, are too common features in all manœuvres. So long as they do not lose a battle, antagonists seem satisfied; whether they win one is a secondary thought. This should not be. Confidence, born of practice is required, lest it be forgotten that there is no victory without a well fought battle.

(4) Tactical training includes of course training in fire tactics. There is no better training and test combined than field firing, both for Artillery and Infantry. It is wonderful to notice the care in handling arms, and the more rigid fire which discipline maintains when the firing is something better than blank. It is very advisable that one tactical exercise at least in every period, two or three in the first period, should be carried out with ball, artillery also firing shell, if it is possible to get enough safe range.

This is the only case in which a marked enemy should be admissible. Training in fire tactics, as every other branch of tactical training, should be progressive, and carried out step by step under the nearest approximation to service conditions. If this is done at a camp of instruction, all ranks will be able to take part in the Divisional Field Firing at the end of the camp, with greater advantage to themselves, and with results proportionate to the extent of their previous training.

XIV.—We have seen that the maximum tactical training has to be imparted in a limited time and without much expense. It is evident, therefore, that the arrangements for quartering the troops in camp most intimately affects the question. The troops cannot move about the country like chessmen, because movement means money. We must arrange therefore in such a way that the largest number of tactical exercises can be worked out without unduly fatiguing the troops, while keeping the troops for the most part in standing camps or barracks. This has been worked out in various ways, the simplest and most primitive method is to keep the troops camped in cantonments during the instructional period, the troops marching out to work and returning by one o'clock or so, or later, to their camps. The disadvantages from an instructional point of view are that some or all of the troops work over ground they know, or ought to know, well, and probably carry out tactical exercises worn threadbare with frequent practice. To get two forces into opposition entails the maximum of marching for the result achieved as they must get away from the immediate vicinity of barracks. There are also manifest disadvantages from a sanitary

Arrangement and organization of instructional camp.

point of a view in crowding troops into cantonments ; the system is cheap, and that is its main recommendation. Aldershot is an instructional camp on these lines for the greater part of the drill season, and most of the annual district concentrations in India follow the same plan.

Another method is to organize the camp into mixed instructional brigades, each under a selected brigadier, who will arrange and supervise the tactical instruction of the troops under him, during the earlier periods of the camp. Each brigade to be located in standing camp, outside cantonments, and a few miles apart. This was the method practically followed in the summer manœuvres last year in England, when the troops exchanged camps at half-time. The system of fixed camps will be found the most suitable for the requirements and possibilities of a District Concentration.

Even if only one brigade can be camped out of cantonments, one part of the force at least will carry out tactical training on new ground. It is a plan which adapts itself readily to the scheme for progressive instruction in combined tactics explained in this Essay.

Each camp consisting of a complete mixed brigade of all arms, tactical instruction can be carried on effectively and easily.

Standing camps in the country away from distractions of cantonment life may, under good command, be made most valuable vehicles for instruction in soldiering, and every one will return to cantonments all the better for the change. The selection of suitable sites is a matter for the Q. M. G's. Department of the district, but in almost all plains stations at anyrate they can probably be found. For convenience and economy of supply the Camps should be within a few miles of cantonments—for convenience of tactical instruction within 4 or 5 miles of each other.

During the 1st and 2nd instructional periods, the troops of each brigade work close round about their camps, during the 3rd period they can oppose each other from fixed bases, returning to their camps at night, or they can combine and carry out tactical exercises together.

XV.—For the better illustration of this point a sketch of actual Illustration of Pro- ground in the vicinity of a Head Quarter poeals. station (Mean Meer) is given in Appendix A.

The place is one probably not especially fortunate in the nature of the country, most of which is cultivated, dotted with villages and all absolutely level. It is therefore manifestly impossible to instruct in hill warfare, all tactical training being confined to plains work, either as against a civilized enemy or against a savage enemy in jungle fighting. In the latter respect the ground offers some possibilities, owing to the extent of rough scrub jungle, some of it very thick. The country may probably be taken as a very fair average specimen of what is likely to be met with in a level district.

On the plan will be found marked four places, C. K. M. & B. North-East, East, and West of Contonments respectively. These places are not chosen haphazard, or merely because they seem to fall in well with the plan suggested. They are actual sites suitable in other respects for the encampment of a mixed brigade, and have actually been used for such purposes. It will be seen that if one brigade camp at C. and another at K., or one at K. and another at M. each can spend the first and second instructional period in working in the neighbourhood of their camps without interfering with one another. In the 3rd instructional period, they can oppose one another under a succession of ideas, or combine and work against a skeleton enemy or another force, if desired. If one out camp only can be formed—B. is a suitable situation for carrying out a series of tactical exercises between the troops there and any left in Contonments.

XVI.—The subject of tactical training at District Concentra-
 Tactical training for
 savage warfare consi-
 dered. tions has now been considered in perhaps its
 simplest phase, namely as a preparation for
 war against a civilized enemy. It remains
 now to consider the somewhat more complicated question, how
 shall the troops be trained within the limits of a District Concentra-
 tion for war against savage tribes? It is beyond the limits of the
 present essay to discuss the larger question of the actual tactics
 to be adopted in the various types of savage warfare. This sub-
 ject has been dealt with in the R. U. S. Institution Journal Prize
 Essay of 1887 by Captain Callwell, and also in last year's Essays
 of the U. S. Institution of India. Interesting papers on jungle
 fighting as applied to Burma have also appeared at various times.
 Experience may furnish us with more examples, but the general
 principles of all savage warfare have been very fairly established.
 The question now at issue.—How shall we train our troops in the
 tactics suitable to various conditions, is in one sense easy, and in
 another difficult, to answer. Difficult because the method or sys-
 tem of any tactical training depends so largely on the armament
 and tactics of the assumed enemy. All civilized nations are now
 armed alike and have virtually adopted an identical system of tac-
 tics. Fundamentally all civilized tactics are the same, though de-
 tails differ. We know therefore exactly what to train for, what tac-
 tics we may expect to meet, in fighting a civilized enemy. Our
 savage enemies however are legion and increase as the Empire
 expands. Their armament and tactics also vary to an equal extent.
 We have therefore to consider how to train our troops tactically to
 meet very varying conditions, and this within the brief month of a
 District Concentration. It is impossible in this short time to train
 to meet all eventualities. It remains then to select one or two types
 of hostile conditions and devote the time to tactical training to meet
 those conditions.

Our Indian land frontier is mountainous on all sides. Hill warfare therefore must be our special care. The probable savage enemies are Pathans or kindred tribes, and the various Indo-Chinese and aboriginal tribes occupying the mountainous jungles on the Eastern frontier.

A tactical training to meet these known conditions will be about as much as can be managed. It is at present, unnecessary, as it is impossible, to legislate for more remote contingencies. Under any circumstances, though circumstances in detail are so various, there is a common principle which should pervade all tactics against savages. The simple tactics of a brave man unhampered by pedantic theory, will seldom, if ever, be out of place. The tactics of the man who seizes his enemy by the throat without more ado are not bad tactics against any savage enemy.

While we as a nation have no practical experience of modern civilized warfare, against an enemy of any quality, we have full and recent practical experience in fighting with savage tribes. Profiting by such experience we cannot be far out of the right course of instruction.

The accepted tactical training of civilized armies is mainly based on the experience of the Franco-German war, now four and twenty years ago, and, as we are gradually learning, some of the most cherished articles of tactical faith—tactical deductions as they have been called—are founded, to say the least, on insufficient knowledge of actual facts.

In the one case the best instruction should be obtainable both in theory and practice from past masters in the art of savage warfare; in the other case our tactical teachers and critics must be but theorists and may be blind leaders of the blind.

XVII.—Our troops, it may be urged, have had so much practice in fighting savage tribes, that tactical instruction in such a matter is superfluous. This is true to a certain extent, but the experience gained by part of the army in India requires to be imparted to the whole. There are no text-books on the subject and the literature of savage warfare though fairly full is not generally accessible. It would, I think, be of undoubted assistance if the accumulated experience gained in many wars with many kinds of savages were crystalized into the form of a short official text-book; meanwhile the personal knowledge and experience of individuals must be our guide in deciding the sort of training required.

While it would be a work of supererogation to teach the troops of the Punjab Frontier Force, for instance, how to fight Pathans or, to instruct the Burma battalions in the subtleties of jungle warfare, the experience of recent hill campaigns shows that some preliminary instruction is certainly required in many cases, and espe-

cially in the case of British or Native regiments new to the work required. How many regiments, to give but one instance, with out some experience, know how to deal with that common form of Pathan offensive tactics, firing into camp at night? Yet regiments may be subjected to the ordeal the first night they cross the frontier, and in such cases the result has not infrequently proved more encouraging to foe than friend. A few days practical training at a camp would be invaluable to a regiment likely to be so circumstanced. This is one example only out of many which suggest themselves.

XVIII.—The great general principle which, as has been seen, must form the basis of instruction at District Concentrations, namely the combined action of the various arms, and a general co-operation between each and every body of men engaged, holds good in the case of savage warfare, in the hills or jungles, equally as in the case of civilized warfare. As the nature of the ground in the former case will almost certainly necessitate the force engaged being broken up into more or less isolated fractions combined action becomes more difficult to attain and therefore requires more careful practice. At the same time an intelligent individuality on the part of all ranks, is required in such warfare, and this must be developed and encouraged by constant practice.

Practice alone, under service conditions, will give the result we wish to attain. What service conditions are, many officers can tell us from practical experience. How to adapt our training to meet those conditions.—Is it not written from Colonel Gawler to the last United Service Institution Essay? There are in the army many officers whose ripe experience makes them competent to instruct and criticise. To these we must look as our higher instructors in the art of savage warfare. The accumulated, and varied experience of many and various officers should not be allowed to run to waste. Those who have excelled in practice, should be the natural teachers in the theory of savage warfare.

The tactical training for savage warfare should follow the same lines as those suggested for training for civilized war. An admissible modification is, that owing to troops having in some cases no preliminary training in hill or jungle warfare from want of suitable surroundings the instruction may require to commence from more rudimentary details. The training for savage warfare must be progressive and systematic, commencing with the tactical use of a few companies, and working up to the action of a brigade with artillery whenever possible. The difference in artillery tactics against a savage as compared to a civilized enemy, and the inadvisability of long range fire of any description in the former case (pointed out both by Captain Callwell, and Captain Carter)

are worthy of note as showing how necessary it is not to apply our theoretical knowledge of one phase of tactics too rigidly to other and different conditions.

XIX.—I cannot think however that the training required can be best imparted at a District Concentration, in the usual acceptance of the word. Many districts possess neither the mountainous nor jungle country necessary for a practical training. In other cases no concentration could take place in the mountains or jungles without the cost being prohibitive. Tactical work, *i.e.*, actual fighting, against savage tribes is usually, and efficiently, carried out by forces not above the strength of a mixed brigade. A much larger force may be in the field, but from the nature of the country the numbers detached on the communications, &c., it is seldom that the blow is struck by any large force acting in combination, most of the work will be done by small columns and detachments often of a few companies only. The difficulties of war with savages are as a rule more due to the nature of their country than to any excellence in their armament or tactics. Our superior armament at once makes itself felt when a savage enemy trusts to himself for victory rather than to his woods and mountains. The battle tactics on our side need be but simple, and may almost be summed up in two words, "Dash and Discipline."

Such being the case, the concentration of a large number of troops together for tactical training in savage warfare seems unnecessary. All that is required to be taught in this respect can be done equally well with small forces of one or two battalions, a battery of artillery (mountain guns in the hills) and a proportion of cavalry should the nature of the country permit. A great deal of useful tactical training could be carried out, under competent instruction at camps of this size. The training should be progressive and all units engaged taught in theory and practice how to work together. The savage enemy must be simulated by those who know the traditional tactics of such an enemy. The actual tactics to be employed in opposition, are, as has been said, simple. Elaborate schemes and manœuvres are entirely out of place.

A steady training to give endurance and confidence in hill and jungle work is essential, and as it is impossible to give such training at most Indian stations it may be necessary to begin with more rudimentary instruction than is warranted in the case of a District Concentration in the plains.

Can tactical training for war against civilized enemies be combined in the same camp period with training for war against a savage enemy? I fear that in most instances the nature of the country available makes it impossible. In some places, a few days,

two or three, of savage warfare, might be introduced into the scheme of instruction for civilized warfare. It would partake however more of the nature of a "comic relief," and could scarcely be taken up in the thorough spirit necessary if anything is to be done well.

I think we must keep the ideas separate, and not try and do too much in the short instructional month or so available.

XX.—At several summer camps, especially in the Murree Hills, and at Kaninkhet, we already have
 Alternative Suggestions. many of the primary requirements of tactical training camps, except that in the latter case there is no artillery, a distinct disadvantage, which however is capable of rectification. There seems no reason, with such excellent opportunities, why a month or so, after the rains have quite ceased, should not be given up at any rate biennially if not annually, to carrying out combined tactical instruction for war against a savage enemy. Climate favours us here, for a month taken then in the hills does not interfere with instruction later on in the plains, except in so far that the demands of drill, musketry, and special courses, seldom allow a regiment to occupy two months entirely in tactical training under service conditions. There is no reason however why such training should interfere in any way with the ordinary and necessary routine of work the burden of which is sufficiently heavy as it is. They may well run concurrently. It is the officers whom we wish to train more especially thoroughly, but if this cannot be, the absence of a company or so at musketry, &c., does not affect the instruction gained by the remaining seven companies. Better to train half a regiment in practical service tactics than no one at all.

There is little more to add. Two localities already exist in Northern India, there may be more elsewhere, where troops are already concentrated to a sufficient extent to carry out combined tactical training, and which in other respect are suitable for the purpose.

These localities, if decided on as suitable, might be recognized as regular schools of instruction for combined tactical training in hill warfare, and corps and batteries put through a short systematic course of a month or less every autumn, officers and non-commissioned officers from other stations being freely attached, the object in view would be thus obtained. Much might probably be done at other hill camps and cantonments were they not in some cases hedged in by petty Native States, and in other cases not as suitable, for administrative reasons, for the collection of any large number of troops. With regard to the necessity of having officers especially trained in the tactics of savage warfare, it is certainly remarkable that while officers are encouraged to attend for instruction in the pale reflection of war at camps nevertheless they are

more than discouraged from gaining experience in the real thing at our numerous little wars. Many more officers than at present, I feel sure, be put through a short course of practical instruction, at a real little war, not only without detriment to the service but to its great advantage. We might then feel confident of the fact that all our officers of any standing in the service were qualified in some degree as instructors in the tactics of fighting with savage tribes. At present the privilege of being attached to a force in the field, for instruction, is confined to Volunteers.

XXI.—To conclude—I have tried to show that as time is strictly limited in District Concentrations,

Conclusion. is essential to occupy that time to the best advantage. To do so, systematic preliminary training in the A. B. C. of tactics is necessary, and the month or so available at the District Concentration should be devoted to training in combined tactics, that is, in the mutual co-operation of every unit engaged. It has been pointed out also that such training must be systematically progressive from beginning to end. How this may best be carried into effect has also been indicated. The secondary course of tactical training for hill and jungle warfare against savage tribes has also been considered and the principal modifications in the rules generally applicable to tactical training at District Concentrations touched on. It is not considered however that training for hill warfare against savage tribes is best imparted at District Concentrations generally, in the accepted sense of the term, but rather that such training should be imparted at certain suitable tactical training stations in the hills,

Finally, be it remembered, that District Concentrations are not the pleasure camp of volunteers. They must mean work, hard, but at the same time intelligent work to all concerned, if they are to be a means of tactical training for war. If they are not this they are waste of time and money. What is worth doing is worth doing well. No good result can be expected without hard work—"Nihil sine labore."



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more than discouraged from gaining experience in the real thing at our numerous little wars. Many more officers than at present, I feel sure, be put through a short course of practical instruction, at a real little war, not only without detriment to the service but to its great advantage. We might then feel confident of the fact that all our officers of any standing in the service are qualified in some degree as instructors in the tactics of fighting with savage tribes. At present the privilege of being attached as a force in the field, for instruction, is confined to Volunteers.

XXI.—To conclude—I have tried to show that as training is strictly limited in District Concentrations

Conclusion. is essential to occupy that time to the advantage. To do so, systematic preliminary training in the use of tactics is necessary, and the month or so available at District Concentration should be devoted to training in combat tactics, that is, in the mutual co-operation of every unit engaged. It has been pointed out also that such training must be systematically progressive from beginning to end. How this may best be carried into effect has also been indicated. The sequence of tactical training for hill and jungle warfare against savage tribes has also been considered and the principal maxims and rules generally applicable to tactical training at District Concentrations touched on. It is not considered however that training in hill warfare against savage tribes is best imparted at District Concentrations generally, in the accepted sense of the term, rather that such training should be imparted at certain special tactical training stations in the hills.

Finally, be it remembered, that District Concentrations are not the pleasure camp of volunteers. They must necessarily be hard, but at the same time intelligent work to all concerned, if they are to be a means of tactical training for war. If they are not this they are waste of time and money. What is worth doing is worth doing well. No good result can be expected without hard work. "Nihil sine labore."



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CHAPTER 1

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The Journal
OF THE
United Service Institution of India.

VOL. XXIV

1905

ERRATA.

In Journal No. 119, page 59 line 3. for "Rai and Jirwa Gurkhas." read "Rai Gurkhas and Jirwas."

The auther of "The Training of Railway Volunteer Corps" is Captain E. H. F. FINCH, and not Captain E. H. F. FINK as given in Journal No. 119.

in a serious manner at all events, must I am afraid remain to most of us too dry, heavy, and above all too theoretical to attract our interest, in a word, too laborious. The library provides what is possible for this study. It is true that a knowledge of the surroundings of the soldiers of different armies can also be obtained from books, but that too is only to be gained laboriously, because the result is hazy and theoretical, and therefore fails to impress us, or take up our full interest. Take for instance an object,—that first made me think of the desirability of a Museum in the Institute at Simla,—the shelter that the German army is provided with for service. One reads about it, and gets the idea that it is a sort of piece of tent cloth, of which each soldier carries one piece; that one piece can be fitted on to another piece or several joined together, and a comfortable shelter made for the men. I have forgotten what it weighs, but even if I remembered the weight, the knowledge, though the best for answering an examination question, would not be very definite. What I want is to see it, to take it up and feel what it weighs, see how it is fitted on to other ones, how set up and the height and space of the shelter it makes. If such a sheet were in the museum,

- (13) General Lee of the Confederate Army, by Fitz Hugh Lee, his nephew and cavalry Commander, (London, Chapman and Hall)
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VOL. XXIV.

1895.

No. 120.

A MILITARY MUSEUM FOR SIMLA.

By Captain A. WALLACE, 27th Punjab Infantry.

Could not the usefulness of the United Service Institution be much increased, by the formation of a museum of the modern arms, accoutrements and equipment of the various military nations, and collections of photographs to illustrate their personnel, their barracks and general surroundings?

The Institution possesses a fine library, and offers in that way every reasonable facility for officers wishing to study military history. Though however, a knowledge of military history must be esteemed by all, as ranking high among the subjects of a military education yet a knowledge of the condition and surroundings of different armies at the present day, must also be a valuable branch of it. The study of history, in a serious manner at all events, must I am afraid remain to most of us too dry, heavy, and above all too theoretical to attract our interest, in a word, too laborious. The library provides what is possible for this study. It is true that a knowledge of the surroundings of the soldiers of different armies can also be obtained from books, but that too is only to be gained laboriously, because the result is hazy and theoretical, and therefore fails to impress us, or take up our full interest. Take for instance an object,—that first made me think of the desirability of a Museum in the Institute at Simla,—the shelter that the German army is provided with for service. One reads about it, and gets the idea that it is a sort of piece of tent cloth, of which each soldier carries one piece; that one piece can be fitted on to another piece or several joined together, and a comfortable shelter made for the men. I have forgotten what it weighs, but even if I remembered the weight, the knowledge, though the best for answering an examination question, would not be very definite. What I want is to see it, to take it up and feel what it weighs, see how it is fitted on to other ones, how set up and the height and space of the shelter it makes. If such a sheet were in the museum,

I could get a better idea of it in one minute, than in half an hour of reading a minute description of it, moreover the knowledge would be definite, and the study interesting and by no means laborious. So I think a Museum would give many officers a great deal of useful knowledge. It would of course cost a certain amount of money. Government would no doubt help. A good deal is spent in India on military education. It would be for Government to decide whether it would not be worth while to lay out 5,000 rupees as a beginning, and thereafter say 500 rupees yearly for the acquisition of more objects; and whether it would not thus give more knowledge to its officers at slight expense, than, comparatively speaking,—is now given to officers by garrison instructors, and in other branches of military education. Government might also take into account, that a consideration of the surroundings of foreign armies, might lead to improvements being introduced into our own. Improvements not only making our own troops more valuable, but perhaps being the direct means of large economies becoming possible. As an instance of which, I would mention a subject which I have before advocated in the U. S. of India Journal, namely, that of sepoy being practised, and gradually accustomed, to carrying their own kits on service as a matter of course. I have no doubt the Japanese infantry carried their own kits, and that but for this advantage, they would not have been able to advance and concentrate in Corea, in the manner they have done. In the first place the transport would not have been available, and even if they had got this transport, they would have been hampered by long lines of baggage animals, found themselves quite unable to feed them, and would have got hopelessly stuck. Figures of French, German and Russian soldiers in marching order would shew us definitely whether we also could not do this.

Much expense could be saved in this way, and what is of greater importance, the infantry made much more valuable. I am sure the men would welcome any such measure rendering them more effective. As regards funds for the Museum, the public, if it approved would no doubt help. It would not be the first time that considerable sums of money had been raised in Simla for public purposes. I append a list of some of the objects that come into my mind as being wanted for such a Museum. To begin with, I do not think anything should be given a place in it, which is merely of antiquarian or historical interest, or only an object of curiosity. Only modern examples are required. Later on should the Museum become firmly established, and Government think fit, to give it room, or by any other means that difficulty can be surmounted, a separate room might be devoted to curiosities and antiquities, but they would be kept quite separate. The objects can be divided into three classes; first, the actual things, or models of them, secondly, pictures or photographs, painted or otherwise, a convenient and simple way of shewing buildings and other large objects which could not otherwise be included; and thirdly, diagrams, by which, distances, weights, numbers, and so on are contrasted with others in a more impressive and easily understood manner, relative numbers being represented by squares of the same relative size, or the trajectories of guns and rifles,

relative to each other, are drawn on paper, so that at a glance,—to take the case of rifle fire, the initial velocity and velocity at different stages, the extent of the danger zone for point blank fire, and for various inclinations of the line of fire, the penetration of the bullet at various distances of different rifles, as compared to one another, can be vividly and definitely impressed on the mind. I am afraid that when magazine articles are appearing at home about the excessive military expenditure in India, the Government will be less inclined than ever to open its purse for an object that has hitherto been dispensable. The saving that might possibly be introduced, and the small amount required will I hope make the balance in favour of helping in the formation of the Museum.

I believe there is a very fine military museum in Berlin. At home, I have seen the collection of the Royal United Service Institution, and was much disappointed. True that it was still in its shabby old quarters, and was on the point of being moved into the fine building in Whitehall, where it is now probable things have much improved. As I saw it, it seemed to me a splendid collection of curios and interesting relics, with some patterns of modern weapons and inventions interspersed; but the whole, so crowded up into ill lighted rooms, and the labels so carelessly made out, and deficient in information, as to be of little practical value to the casual visitor. Foreign rifles for instance, of which there was a good collection, were ranged in racks on the floor. Modern and obsolete inventions, mixed up. One had to stoop down to see them, and the rifles being behind a glass-case, that was all one could do. What I trust would be done at Simla, would be to have half a dozen of the leading adopted rifles on a table, where every one could take them up and examine them. A model of the action, magazine, and cartridge to be near the rifle, and a label containing all the useful information possible. Such as weights of different parts, and total range, penetration &c., attached to the rifle, or conspicuously near it. I presume there would be no difficulty in obtaining patterns of rifles, models &c., through our various military attachés. I am not sure whether some governments do not wish to keep their patterns secret. If they do, I suppose they would have to be dispensed with, but there must be still many objects which no government would mind being obtained for the purposes of a Museum. The following is a brief summary of some of the objects that strike me as being suitable. The project once started, it would be for the committee of management to decide which of them from importance, room available, or cost, should be acquired, or dispensed with. To begin with actual patterns or models.

a. Rifles, carbines, service revolvers, bayonets, intrenching tools, officers' swords.

Life size figures of infantry men, French, German, Russian, in field service marching order.

The contents of their knapsacks, separately.

Saddlery and accoutrements of a cavalry trooper, French, German, Russian.

Sets of cooking pots, models of field kitchens.

Models of Field and mountain guns and their projectiles.

b. Pictures and Photographs.

Troops, batteries and companies on parade, peace strength and war strength.

Groups of officers of regiments and battalions.

Group of Staff officers.

The transport of a regiment or battalion on the march; bivouacs.

Barracks, exterior and interior views.

The various uniforms coloured, shewing the distinctions of the various branches and divisions of the service, and distinguishing marks of rank.

c. Diagrams, on a uniform scale shewing relative numbers of

Cavalry, Infantry, Artillery, Engineers, peace strength, war strength, 1st reserve, 2nd reserve, and other branches.

Officers for same.

Horses for same.

Guns.

The proportion of the various races comprised in the Russian army, Fins, Russians, Cossacks, Caucasians, Turkomans.

The comparative trajectory and penetration of various projectiles, the effect of shrapnel and common shell fire of different guns at various ranges.

It is not necessary for my purpose to give a longer list; other objects will no doubt suggest themselves.

To attempt too much all at once would no doubt present difficulties, but to make a beginning seems to me quite plain and easy, and once begun the gradual extension of the Museum will only be a matter of time and thought.

The diagrams for instance would take up little room, cost little and can be made out at Simla as well as anywhere else; all that is required being the information that can be gained in the books of reference, some amount of labour, and ingenuity to think of requirements, pick out what is wanted from the books and arrange it. Our Intelligence Branch or Educational Branch might undertake this and make a present of the result to the Institution.

MALAYA AS A POSSIBLE RECRUITING GROUND FOR THE INDIAN ARMY.

The authorities consulted in preparing this paper have been,—
Crawford, A. R. Wallace, C. B. Bowden, Sir J. F. Dickson, K.C.M.G. and Rajah
Brookes' Diary.

By Colonel M. J. KING HARMAN.

The apparent possibility of strengthening the native army of India by the enlistment of Malays in class regiments was suggested to me some years ago, and was touched on by me in a previous paper; but as no notice was taken of the matter, and as I subsequently learnt that there were some objections to be met before any active steps could be taken towards carrying out the idea—objections which I did not consider valid, but which at the time I could not refute.

I have taken advantage of the first opportunity that presented itself, to hunt up all the information that I could find regarding the Malays and the countries in which they dwell.

The published information regarding them does not help much on many essential points; and I have been able to find only one man who has lived much amongst those people; therefore the results of my enquiries and investigations have been somewhat meagre, but such as they are, they may perhaps prove useful in stimulating others who are younger and more favourably situated than myself, to pursue the enquiries further by personally visiting that part of the world which is known as the Indian Archipelago, and by publishing their opinions regarding the suitability of the inhabitants for military service; the most popular measures to adopt in order to obtain the best classes of men for the ranks and also for commissions; and in fact by giving all the necessary information which will be found wanting in the following pages:—A somewhat difficult job, I must confess, for anyone who is not acquainted with the Malay languages, but one which I should think would amply repay any officer who was adventurous enough to undertake it.

The chief point that I had in view was the chance that Malaya might possibly be able to supply sufficient men of a good stamp to form part of the garrison of Upper Burma, and so relieve the present great strain on the Punjab which now furnishes most of the garrison of that distant and unhealthy province.

The British possessions in the Indian Archipelago consist of the Straits Settlements; and the small island of Labuan which is situated close to the north-west corner of Borneo, and is a separate self supporting colony. "Straits Settlements" is a political rather than a geographical expression. It consists of certain detached portions of the coast line of the Malay peninsula, and of certain islands adjoining that coast;

the distance between the most northerly and southerly points being about 350 miles.

Commencing from the north we have the province of Wellesley and the adjacent island of Penang; then comes a strip of semi-independent territory known as Perak; after which we come to the Dindings which together with the small islands of Pangkor were taken over by the British in 1874. Between this and Malacca there intervenes another semi-independent tract generally known as Selangore and Pahang; and then comes the protected state of Johore; immediately south of which, and separated from it by a narrow strait three quarters of a mile wide is the flourishing island of Singapore, which is 27 miles long by 14 miles wide. The colony is administered by a governor assisted by an executive council of eight officials, and a Legislative Council. It has a Civil Service of trained officials of its own.

Singapore is the head quarters of the government. A great number of the native states that are not actually British territory are under the supervision of the Straits Settlements government which has a representative in each state, the most prominent of these are Johore and Pahang; and besides those there are other states such as Kedah, Tringnanor, Pukit and Sanjorah which are under Siamese influence. This influence is solely due to the superior talents of the Siamese who are a very diplomatic race, but who in points of physique and courage are no match for the Malays.

It appears to be not unlikely that unless Great Britain comes to some clear understanding with France regarding the boundaries and spheres of influence of Siam, the French may some day advance claims to protect a great many of the Malay states on the west of the Gulf of Siam, on the grounds that they are tributary states of Siam proper.

The whole of north Borneo, about 30,000 square miles in extent, with a coast line of about 900 miles is held by the British North Borneo Company under royal charter of 1881; and all that remains of the ancient kingdom of Borneo lying between Sarawak and British north Borneo has recently been taken under British protection for the security of the Sultan of Brunei. Our connection with Malaya dates from the year 1578; and the East India Company was granted a charter for purposes of trade there in 1600. Our presence in those parts brought us into constant conflict with the Dutch who had also established themselves there, and afterwards with the French. Eventually we gave back to the Dutch the islands of Sumatra and Celebes by treaty in 1812, and Malacca was ceded to us by them in 1825. We took Java in 1811 from the French, and gave it over to the Dutch by treaty in 1814. The English directed by Mr. Light and Mr. Scott established a settlement on Pulau Penang (called by them Prince of Wales Island) in 1785. The province of Wellesley is still, I believe, held subject to a tribute to the Rajah of Queddah (Kedah) who is himself a vassal of the Siamese kingdom. In course of time the British possessions became a sub-government under the Madras presidency, and were finally formed into a crown colony in 1867.

The past history of the races inhabiting the mainland and islands of the Archipelago is buried in obscurity, but they are totally different from the Polynesians who inhabit the farthest islands of the Pacific; and the best authorities consider the Malays to be only colonists, who, at no very remote period settled along the shores of the Malay peninsula and on the banks of its rivers, and as pirates spread gradually through the islands. Although Malacca has been in British possession for so many years, yet so great has been the jealousy on the part of the rulers of the native states of foreign interference, that until quite recently little or none but hearsay information was obtainable, and Crawford, Newbold and Wallace were almost the only authorities; but the system of exclusiveness is passing away, and lately many travellers have journeyed through the states east and south of Malacca. The independent state of Johore at the south end of the peninsula is now advancing steadily under the rule of the present Maharajah who is described as being a most enlightened prince, anxious to improve the moral tone of his people and to promote everything in the way of progress and civilisation.

Centuries ago the Sultan of Johore held extensive sway in the eastern Archipelago, and bestowed important benefits on the early trading societies of white men.

From the charming book written many years ago by that great traveller and naturalist Alfred A. Wallace we may learn a good deal about the Malays. He divides them into tribes; of which he terms four to be "great," a few minor and semi-civilised; and a number of others who may be termed savages. The Malays proper inhabit the Malay peninsula, and almost all the coast regions of Sumatra and Borneo; besides being found in large numbers in some of the other islands. They all speak the Malay language or dialects of it; they write in the Arabic character and are Mahomedans by religion; but whether they are Sunis or Shias I cannot tell. The Javanese inhabit Java, part of Sumatra, Madura, Bali and part of Lombok: they speak the Javanese and Kavi languages which they also write in native characters. They are Mahomedans in Java, but are Brahmins in Bali and Lombok. The island of Celebes is inhabited by Bugis (or Bugesses) who speak two languages, *i.e.*, Bugis and Makassar; they also are Mahomedans.

The fourth great race is that of the Tagolas in the Philippine islands. The savage Malays appear to include the Dyaks of Borneo; the Battaks of Sumatra; the Jakuns of the Malay peninsula; and the aborigines of northern Celebes, of the Sula island and part of Bouru.

The Malay language which is described as the easiest and softest in the world, is known to educated Malays as *Jāwi*; it appears to contain some Sanskrit and a good deal of Arabic, and it is the *lingua franca* of the whole Archipelago.

Mr. Joseph Hatton, writing in 1886 about the adventures of the celebrated explorer Frank Hatton who lost his life in Borneo, gives us some information about Labuan which was ceded to the British in 1847, and which at one time promised to be an important coaling station for

the fleet.* He describes the Klings as being by far the finest type of native in Labuan; sturdier and finer looking than Malays, and rather darker in complexion. The published opinions regarding the Malays do not differ from each other in any very important respects. The first that I find is that of an anonymous writer in the year 1769 who wrote a paper strongly recommending the enlistment of 5,000 Malays by the East India Company; the men to engage for four years, with the option of continuing on for a pension if approved: no families to be allowed for short service men. The writer had much personal experience of Malays and frequently employed them as boatmen in India; he believed them to be fond of a military life, and was confident that sufficient volunteers would be readily found. His opinion of them is that they are "clear limbed, light of foot, patient under hardships and have great command of temper, and therefore capable of discipline and subordination to a great degree—a hard strong built people, not near such a feeble race as the *Indostanners*, and capable of suffering much more fatigue." He further states that the Dutch employed Malays as soldiers in Bengal in 1759, and employed them with success in their subsequent wars in Ceylon; also that the Portugese employed them in their wars at Goa in former days. It does not appear, however, that his recommendation found favour with East India Company; at least I cannot find any record of the enlistment of Malays into our army; although they were subsequently enlisted for service in Ceylon and were very highly thought of there.

Next in chronological order is the late Mr. John Crawford who was for long the British Resident at the Court of the Sultan of Java, and who wrote in 1820 a most interesting history of the Indian Archipelago, which is still regarded as the standard work on that subject; therefore his opinions are entitled to special respect. He writes of the Malays as being strong and robust, and capable in their own climate of withstanding much fatigue and privation; being able to support a degree of exposure, privation and fatigue, under which the constitution of Europeans or natives of India would soon sink; and he further shews that in Ceylon they have been found to be the only description of foreign troops capable of withstanding the inclemencies of a campaign.

As regards their moral qualities, he found Malays to be more truthful, more capable of attachment and more simple in their manners than other eastern nations; having no capacity for intrigue like other Asiatics and being neither litigious, avaricious nor rapacious. They are good-humoured and cheerful to a degree; no gross or abusive language ever occurs in their intercourse; and they are most hospitable. On the other hand he found them to be excessively credulous and superstitious, fond of external pomp and show; very revengeful; somewhat impatient of control, and unwilling to submit to insult. Such appear to be the chief vices inherent in those island which together with a special love of gambling, combine to give rise to those acts of desperate excess which

* It was actually taken possession of by Captain Rodney Mundy, R.N., on the 24th December 1846.

are known to us by the term of running amuck (amok), and which are universal throughout the Archipelago. The most usual form of "Amok" appears to be when the desperado attacks indiscriminately friend and foe, killing and wounding all whom he meets, until he is killed himself.

From the nature of the countries which they inhabit, the Malays have necessarily been always a maritime people, and whether as pirates or as traders they have always been considered to be fearless and skilful navigators; whilst their bravery has been well tested by our constant fights with their armed Praos, or war-boats. Crawford considered "that they were seldom wanting in individual courage, and that when they are supplied with the confidence which discipline alone is adequate to confer upon a civilised army, they may be considered as formidable enemies." In his time, every male, from the age of puberty was armed for the protection of himself, his family, and his dwelling; therefore the inhabitants of the Malay countries must have been strictly an armed population. What they are now will I hope be fully described later on by some one else; but it is not probable that they have entirely lost all their fighting instincts. It is, however, only fair to state here that in the official notes on Perak which were published in 1886, the Malays are described as being an indolent, contented, thriftless, unambitious, polite and peaceful race: mainly the reverse of the sullen, revengeful, silent, blood-thirsty people commonly portrayed in books of travel. It is further stated in the report that Malays do not cringe to white men; also that they are grave, courteous and proud. The value of an opinion depends entirely on the qualifications and experience of the individual who expresses it; and I am unable to ascertain who compiled that part of the official report from which I have quoted. However, irrespective of their notoriety as pirates, we heard enough of the Rajas of Selangore who were famous for the fierceness of their internal quarrels; and of late years we have read much of the trouble that they have given, and are still giving to the Dutch in Sumatra, Bali and Lombok; so I think that the account of the indolent and peaceful character of the Malays must be accepted with caution.

Mr. A. R. Wallace describes the Malays as follows:—Short in stature, but very strong, active and hardy; the face broad and flat and almost destitute of beard; and the breast and limbs free from hair. In character, quiet, impassive, undemonstrative; slow and deliberate in speech. The higher classes are exceedingly polite, and have all the ease and dignity of well bred Europeans, but combined with a reckless cruelty and contempt of human life, which "is the dark side of their nature."

No paper, however short, dealing with the races of the Indian Archipelago would be complete without a reference to that famous man Raja Brooke of Sarawak, whose interesting diary was edited in the year 1848 by Captain Rodney Mundy, R. N. The diary deals almost entirely with the islands of Borneo and Celebes; but he describes the Malays of Singapore as being a "simple minded but independent people, who would resent ill usage with more violence than discretion, and who appear to have but little idea of the wily craft requisite to enable them to contend

with the Chinese." He also makes mention of the island of Talang Talang near Sarawak, on which the Malays had a fort armed for protection against the Manun pirates from the Sulu Sea. In his many descriptions of the different tribes of Dyaks* to be found in Borneo he clearly shews in what respects they—who are all heathen and mostly wild men—differ from the Malays who are all Mahomedans.

For our purposes, I think that the most interesting parts of the Diary are those in which he describes the inhabitants of the Celebes island.—Sir Stamford Raffles, in page 145 of his memoirs asserted that the Bugis, and Makassar men of Celebes, as also the Javanese were much like the Malays in every way, but were a distinct, and a superior people. Rajah Brooke, however, considers them to be sprung from the same stock, and to be alike in dress, habits, features and language. In one place he expresses his opinion that in many respects the Bugis were far superior to any other Eastern Nation; and after a further acquaintance with them, he writes that "they are well bred, but without the polish of the Malays." He describes them as being tenacious of the purity of their descent, and believes that no other nation grants higher privileges to high birth. If ever we took to recruiting in that island we should probably find this native aristocracy most useful. Rajah Brooke states his belief that the Bugis are the greatest bullies and boasters in the Archipelago, but at the same time are the bravest and most energetic race; very open in expressing their sentiments, shrewd but simple, cunning but not acute; and no match for the duplicity of Europeans. He writes in one place. "The English evidently enjoy the highest character among the people of Wajo" (the South Eastern State) "who look to them for protection, and cannot understand why a powerful nation (which they are told we are) takes so little interest in their affairs, and has so little regard to its own advantage." Such language should I think encourage us to cultivate the acquaintance of those people more closely. Finally the Rajah writes as follows:—"The Bugis, as far as I have observed, are a manly and spirited race, the same size as the Malays, slightly formed, but clean limbed and remarkably free from cutaneous diseases. Their vices are the vices of their condition and state of society, amongst which, laziness and the use of the "Kris" (Knife) are the most frequent. They are idle, but capable of great exertion under excitement, and might be trained to regular labour if the produce were at their command. He considered the people of Wajo to be the best men in the island.

I have recently had the advantage of much conversation and correspondence regarding Malays with Mr. H. Sinclair a well known resident in Bangkok, the capital of Siam, who has spent many years of his life in the Eastern Archipelago, who is personally acquainted with some of the leading Rajahs and who speaks their language fluently; and his opinion coincides entirely with that of Crawford. He also lays great stress on the strong attachment of Malays to those Englishmen

* NOTE.—In pronouncing such words as Dyak, Perak &c., the Malays omit the final letter "K."

who know their language and who treat them fairly and sympathetically; and he believes that English officers who can speak the easy Malay language would have no difficulty whatever in securing as many good recruits as they wanted. He recommends Penang, and Singapore as recruiting centres, with depôts throughout the native States: and he considers that the finest men will be found in the Tringanor State which is situated on the coast between Bangkok and Singapore.

It would appear therefore that we have in the Indian Archipelago a new recruiting ground of great value; and I hope that further investigation and enquiry will prove that the races have not deteriorated.

If so, the solution of some of our difficulties in providing efficient garrisons for Burmah may perhaps be more easy in the future than it was considered likely to be some time ago; and I can see no reason why Malays and Bugis should not garrison Assam also instead of Gurkhas, who could then be moved to localities that would suit them better. There would probably be no difficulty in obtaining men enough to form three regiments for the Southern Bengal army, and three for the Burmese portion of the Madras army, all real good fighting men, and all Mahomedans; exactly suited by habits, birth and religion for those parts of the country which I have indicated, which have proved most unhealthy for Punjabis and also for Gurkhas, and which require to be held by troops that are neither Buddhists nor Hindus.

There are obvious difficulties to be overcome, but none of them can be very formidable, and if they proved to be of little hindrance to the War Office and to the Government of Ceylon in raising a regiment for service, how much less are they likely to hinder us in India if it was considered advisable to raise regiments in Malaya, and the adjacent islands.

Although the Ceylon Rifle Regiment was in existence for many years, and was well known to be a very smart and efficient corps, yet I have been unable to find any history of the regiment. All particulars will, however, be found if required amongst the Ceylon Government records. From the last standing orders of the regiment dated 1850 it appears that the strength was 1000 fighting men, composed chiefly of Malays, a certain number of men who are vaguely termed sepoys, and a few Caffrees (probably African Kaffirs.)

The number of British officers as shewn by the Army List was

- 3 Lieutenant-Colonels.
- 3 Majors.
- 22 Captains.
- 44 Lieutenants.
- 22 2nd Lieutenants.

Would that all native infantry regiments in the Indian Army were officered in that proportion, but we are too poor now-a-days to afford to be so efficient as that would make us, therefore any Malay regiments that may be raised in future must necessarily be officered the same as all others are.

The standing orders to which I refer are very nearly the same as existed in those days for all native infantry regiments in India, and

contain no rules regarding recruiting, and almost the only mention of Malays in the book is contained in the order that the Adjutant must be well acquainted with the Malay language so as to be able to translate freely all papers in that language. There is a special order against gambling, for which the punishment was very severe. We are consequently left very much in the dark as regards the most important points connected with the raising and maintenance of the regiment, all of which, however, will probably be on record in the Ceylon Government offices. They are not an untried race like some of those beyond our North Western Frontier, and numbers of them have been employed in the Police at different places.

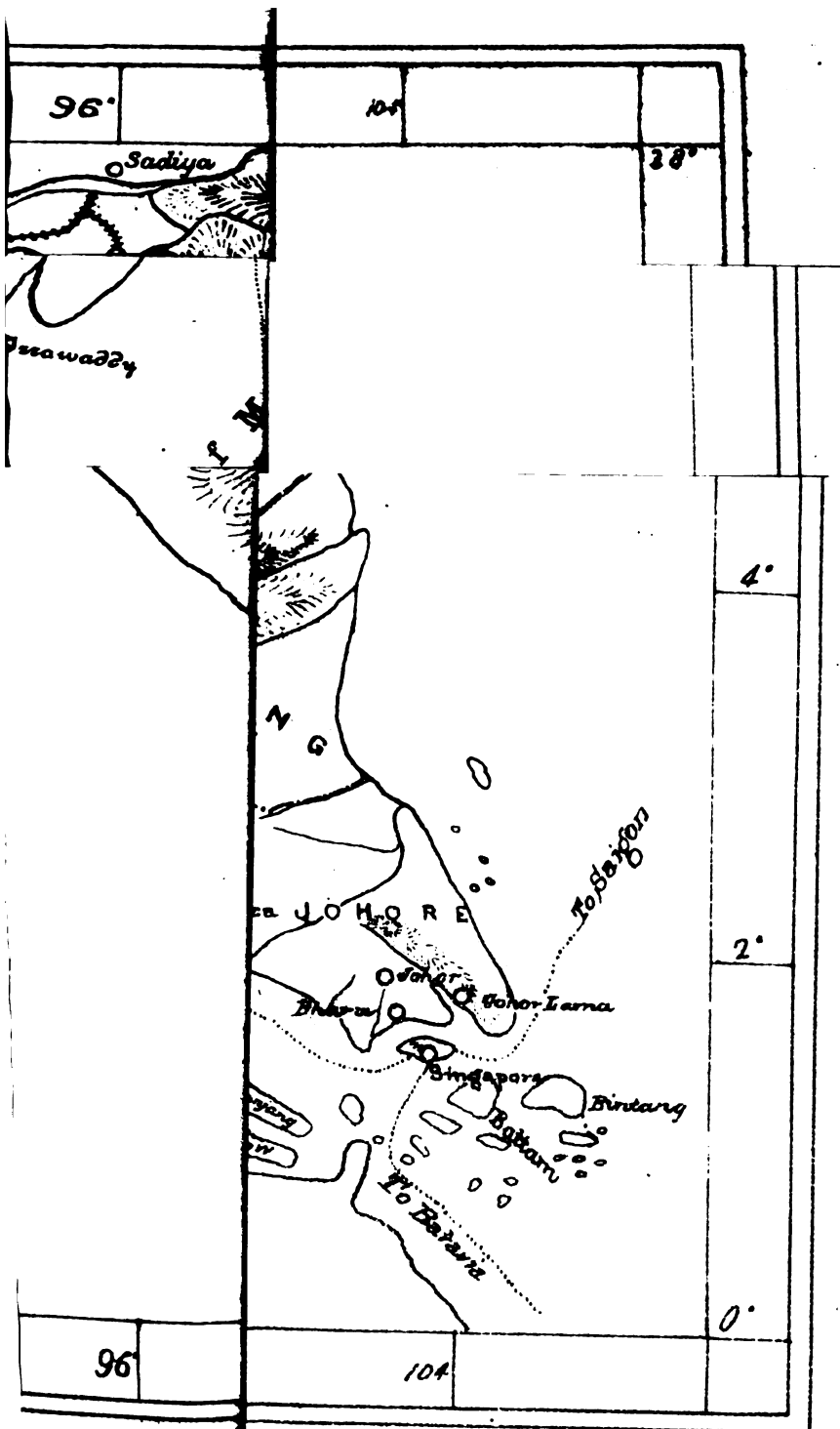
Malays on the coast are chiefly fishermen, with piratical proclivities; those inland are rice cultivators, and in the towns they are small shop-keepers and cab drivers.

The present state of our attitude towards the native states of the Malay Peninsula may be well summed up in the following extract from the farewell speech made by a late popular Governor of the Straits Settlements Lieut.-General Sir A. Clarke, K. C. M. G. &c., :—"The recent policy towards the Native States, for inaugurating which I have received so much commendation, is merely the natural antidote to over 80 years of neglect and disregard; and when we witness what has been done in this land of Johore during the reign of our entertainer, the present Maharajah, we cannot fail to derive great hopes for the future of other states in the Peninsula, when their rulers have learned, as he has done, to abandon exclusiveness and to welcome the introduction of knowledge and industry. There is no thought in the policy that I have been able to foreshadow of annexation, and to the Princes and Chiefs now around me I convey this assurance, that all that we wish to see is good Government and consequent peace and prosperity of the native States under their native rulers."

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VISUAL SIGNALLING.

By Lieutenant F. H. PIGOU, 1st Infantry, Hyderabad Contingent.

I.—On page 4 of the “Manual of Instruction in Signalling 1893, amongst the first principles of Visual Signalling,” it is laid down that “the dot is taken as the unit, and the dash represents *three* times the length of the dot :” that “the pause between each complete sign or letter should be made equal to a dash or three units, and the pause between words (or groups) should be double, or six units : and that good signalling depends upon the accuracy with which the correct lengths of dots and dashes, and the separating intervals and pauses, are maintained.”

On this last clause I base my suggestion, and, in order to accustom the signaller to the rhythm from the very commencement of his instruction, I venture to propose the following method :—

II.—The “Example Sheet” is ruled somewhat like a blank music score, but with the lines in groups of four. Each group gives three equal spaces. The lines of the first group are numbered from the top 1, 2, 3, 4.

To make a dot write diagonally from “1” down to “2” and up to “1.”

To make a dash write diagonally from “1” down to “4,” pause slightly but *keep the pen on the paper*, and up to “1.”

To make a succession of dots start from “1,” and proceed 1—2—1—2—1 &c., without a pause until the ordered number of dots have been made ; always ending on “1.”

To make a succession of dashes start from “1” and proceed 1—4 pause 4—1—4 pause 4—1—4 pause 4—1 &c., until the named number of dashes have been made ; always ending on “1.”

The pause on “4” should be very slight, and the pen on no account raised off the paper.

This pause represents the “dwelling on the dash” in actual sending, and makes fast sending easy to read by “marking” the time.

In making a number of mixed dots and dashes, there must be no pause on “1” between a dot and a dash.

III.—To apply the above to the instruction of a class.

Supply each man with a sheet of paper ruled like the Example Sheet, and instruct him as laid down in the Manual, making him write slowly at first to get accuracy. and then gradually faster.

As soon as the class has learnt to write the dots and dashes correctly, the alphabet should be taught ; each letter being first sounded on the dummy key by an assistant Instructor, who should be selected for his accurate sending.

On the Example Sheet are shewn the alphabet, the numerals, the authorized abbreviations and their answers, and a sentence with the proper *pauses* between letters, and words.

When the class has learnt to write all the above in correct time these 'pause' dashes need not be written, but the pauses **must** strictly kept.

Owing to the pen being raised from the paper after each letter completed, before commencing the dash which represents the proper interval between letters (or the two successive dashes which represent the proper intervals between words or groups), and its being again raised after completing this dash before commencing the next letter, the total pause will be rather longer than that laid down; but I think that not disadvantageous, as the tendency of every signaller, when sending at a quick rate, is to cut short the pauses, or separating intervals.

IV.—The advantages claimed for the above method are :—

- a. It is extremely simple, and very accurate.
- b. In conjunction with the dummy key it thoroughly imbues the learner with the rhythm.
- c. A signaller, who from any cause is unable to practise with the signalling instruments, can keep himself fairly up to the mark by half an hour's practice daily in this manner.

I would ask any one, who, being acquainted with Morse signalling may read this paper, to try writing letters, or 'groups' of letters, or words in the manner explained above, and I am confident he would be impressed with its utility.

General-in-Chief, who is now reviewing the hostile position by the light of the cavalry reconnaissance. The order of the battle is then settled, and the General-in-Chief indicates to the C. R. A. the relative positions to be occupied by the mass of artillery, in its relation to the advance guard in action.

NOTES ON TACTICS AND ORGANIZATION OF ARTILLERY MASSES.

By Major E. N. HENRIQUES, Royal Artillery.

Questions of artillery organization and training, cannot be properly considered, without touching on larger topics, such as the established organization of the three arms, and the general conditions of warfare.

On two points in artillery organization and tactics there is practically complete agreement.

1. The six gun battery is the smallest tactical unit consistent with continuity of fire. On the other hand it should be noted that any increase would reduce the volume of fire, or else cause undue hurry, and therefore imperfect fire control, which must seriously impair the effectiveness of fire.

2. The highest efficiency of artillery fire cannot be attained without unity of action, and this unity is not possible unless batteries are massed under one command.

I will now consider the sequence of events in a normal action indicating how, in my view, the effective employment of massed batteries is influenced by tactical organization and the system of training.

The present organization of an army corps in three divisions, and a cavalry division,—each with its own artillery and the corps artillery besides, thus forming five separate fractions—appears to me faulty. It is seldom that three suitable roads are available to concentrate on the frontage required, for the deployment of such an army corps. If advancing on two roads, with divisions one behind the other on one of them, the deployment must take longer than in the case of the two division army corps. If advancing on one road or in an open country, there is no advantage in either organization. It will moreover be seen by the sequel that artillery while it is influenced by this general disadvantage, will in the employment of massed batteries, be subject to other adverse conditions, which render its deployment less rapid and effective.

Let us picture an army corps with its cavalry screen unable to advance further. The advance guard is in contact with the enemy's infantry, and its artillery has come into action. The cavalry division is being withdrawn and is to be echeloned on one flank by order of the General-in-Chief, who is now reviewing the hostile position by the light of the cavalry reconnaissance. The order of the battle is then settled, and the General-in-Chief indicates to the C. R. A. the relative positions to be occupied by the mass of artillery, in its relation to the advance guard in action.

The C. R. A.'s duties with the General-in-Chief are for the moment ended, and he directs his attention to getting every available gun rapidly into position, in order to unmask the enemy's dispositions and to obtain as early as possible mastery over his artillery.

The disadvantages of the three division organization now become very apparent. It is an easy matter for a general to settle according to circumstances the deploying distance between the advance guards of a two division army corps, then to form the divisional artilleries on either flank, and to fill up the gap in the centre with the corps artillery. With three divisions it is quite another matter. The corps artillery may be divided to fit into the two intervals between divisions; or a very much larger space must be left in one of the intervals to allow the whole corps artillery to deploy; or thirdly the three divisional artillery units might be formed into one mass to fill one interval, and the corps artillery the other. Such formations may be criticized on tactical grounds, but the primary objection to them lies in splitting up the artillery force into so many fractions, and the suspense in which these fractions must remain for some time during their advance, before definite orders directing their deployment can reach them. Delays and countermarches must be the consequence.*

The artillery of the advance guard has now probably been supported by the artillery of the cavalry division, and it will, if acting under more favorable conditions than described in the preceding paragraph, by its fire have focussed and drawn into its true position the advance at a rapid pace of the whole artillery force.

The C. R. A. will before the arrival of the main forces of artillery, direct the following duties:—

- (1) Send out scouts to discover any cover, which, during the withdrawal of the cavalry screen, may have been occupied by the enemy, and might thus become a source of danger to the artillery, while it is still poorly supported by the infantry.
- (2) He will himself examine closely the selected position, and determine how it can best be occupied by the force at his disposal.
- (3) He will examine with the greatest care the position of the enemy and all tactical points, assisted by range takers and his staff.

* NOTE.—Suggestions have been made, to do away with the divisional and corps artilleries, and to form the whole artillery in the army corps into one body. I cannot but think this a most dangerous extreme. Provision must always be made for the sudden independent action of a division of all arms, and although a reserve of artillery is utterly unsound in principle, until the fight has to some extent developed, it is not easy to determine where the predominance of artillery will be required. Further, if the enemy were aware that so large a mass of artillery would be deployed in one continuous stream, it would be strange if he did not seize the opportunity offered by the infantry being delayed so much in rear, to push forward his infantry and to attack the ill protected artillery in flank. It is only by judicious combination of the three arms in deployment that such enterprises can be counteracted.

These important duties form one group and cannot well be divided. It is not easy to conceive, how they can be performed without loss of efficiency by the officers whose first duty is to lead their batteries into action. On the other hand, the intimate knowledge, which the C. R. A. would have of the General's plans, and the comparative leisure at his disposal, will if he be furnished with a suitable staff eminently fit him for the execution of these tasks. Moreover the grand mass of artillery will thus be formed up with more celerity and precision.*

For the first duty the establishments of batteries should be slightly increased say four or five per cent. These six or seven extra men should be trained in scouting, reconnaissance, and signalling. They would also be used as orderlies and connecting links just as the French use their "*agents de liaison*." The corps artillery would supply the C. R. A. with a sufficient force of scouts under an orderly officer.

Two or more groups of range takers should be at the disposal of the C. R. A., (taken likewise from the corps artillery,) and should be set to work as early as possible by a staff officer, to take ranges of all important points, and such as are likely to become of importance during the action. The positions of the range taker should be well marked so that corrections from them can at any time be made. The staff officer in charge should be able to make a good panorama sketch of the battlefield, and mark on it all the ranges taken. In the hands of the C. R. A. such sketches will afford a most valuable key to the position of the enemy, and will enable him to give clear and precise orders to his batteries.

In the meantime the C. R. A. will have fixed the positions, and ordered the formation of the artillery fractions. The configuration of ground usually restricts the formation of artillery, and the line of guns follows more or less closely the crest line of the position. It is however very desirable with massed batteries, that some form of echelon from the leeward flank should be employed, to obviate smoke interfering, and to render the task of ranging more perplexing to the enemy. Echelons require somewhat more lateral space but with large masses of artillery, intervals must be left to enable small bodies of infantry to advance as occasion requires.

The officers commanding divisional and corps artillery, while leading their batteries to the front, will send their adjutants forward, to receive their orders direct from the C. R. A., as to dispositions, alignment, and manner of opening fire, &c. The adjutants will immediately return to their commands, and on their way reconnoitre the ground to be passed over, so that they may give the best information to their colonels as to the advance. It will frequently be found necessary to leave orderlies at fixed points to act as guides in coming into position.

The advance into the first artillery position is usually unmolested by fire. All ammunition wagons will be kept with the guns as long as

* NOTE.—Instances are on record (*vide* Prince Kraft) of commanding officers going forward to reconnoitre and losing their commands. Frequent unrecorded delays also, must have been the result of this procedure.

possible, and in no case should wagons ever be separated till the artillery has disengaged itself from the other troops on the line of march. The first line of wagons should follow their guns closely going into action and should have six horse teams. Under normal conditions the second line of wagons would be conveniently formed into three groups, and each stationed with a view to the supply of corps artillery and the divisional artilleries. Officers other than the captains of batteries, should be placed in charge. They should be responsible for the ammunition supply, and keeping up communications with the nearest bodies of artillery, and it must be clearly understood that the second line of wagons is to supply unconditionally the nearest batteries, and any that may urgently require ammunition. The colonels commanding will, when they halt to prepare for action indicate as nearly as possible the positions to be taken up by the wagons. The officer in charge is however responsible for its safety, and any subsequent change of position that circumstances may require, should immediately be notified to the fighting line. When ammunition has to be replenished in the fighting line, and no advance is contemplated, the same teams should take away the empty wagons, as it is useless to expose a double set of teams to fire.

The relative positions of the second line, the teams of the first line and gun limbers should be regulated by the following principles. Absolute security from frontal fire should be secured to the second line; the limbers and teams of the first line must preserve the connecting link with their batteries much more closely, and should only seek such shelter as is consistent with an ever watchful readiness to limber up. It is a debatable point whether under some conditions the teams of the first line of wagons may not with advantage be allowed the extra security of the second line. When the ground in rear of the artillery position is a dead level without cover, it would appear advisable that the limbers should keep on the move, advancing and retiring between 300 and 600 yards in rear. If they can still keep up the required touch with their batteries, more security from fire will be found on a flank in rear of infantry, than immediately in rear of guns. To meet a sudden cavalry charge limbers should be taught to form "lagers" with the horses facing inwards, corresponding in a measure to infantry rallying squares. A few gunners with their carbines might then offer considerable resistance.

Whatever is to be the formation of the firing line, the advance into position of a large body of artillery should always be in echelon. Any trifling delay in unlimbering is quite insignificant in comparison with the advantage accruing in the accuracy of alignment and intervals, and the power which remains with the officer commanding, up to the last moment, of making slight alterations of alignment during the advance.

I cannot but think that the principle of denuding the fighting line of all horses has been carried to a dangerous extreme, and that batteries—especially when acting in mass—have now been left without sufficient means of communication. Single horsemen distributed in rear of batteries, would be quite as safe as any one, and without

them a mass of artillery could not be worked for long in an efficient manner.

Each battery as soon as it has found its range should send a written report, giving the target, range, distribution and apparent effects of fire. This report would be transmitted to the C. R. A. who by comparison and observation will gain much information as to the enemy's position.*

In the meantime the infantry will have taken up its position in preparation for attack. The C. R. A. should have taken early measures, to obtain ample warning, not only as to the manner of the attack, but as to the precise moment it is to be delivered. Otherwise he cannot insure the wagons being full of ammunition at this critical stage. He will give general orders as to how the attack is to be supported, and tell off any fraction of the artillery, which may be required for special independent enterprise.

During the second phase the C. R. A. can no longer keep up the same detailed command of the whole artillery, as he has previously exercised. The mutual relations between the arms is now reversed. The infantry having, under cover of artillery fire, advanced into positions whence it can effectually engage the enemy, becomes the principal factor, and should occupy the most favorable positions. The artillery fractions now support the infantry, not by distant fire, but by themselves advancing to decisive ranges, wherever they can find positions. Combined artillery action, as understood in the first phase, is no longer possible, and its activity becomes more and more localized.

To carry out the general instructions received from the C. R. A. the colonels commanding fractions, will now have to select their own positions, decide on the exact moment of advance, and as far as time and other conditions admit carry out all the duties we have already assigned to the C. R. A. in the first position. Even in an open country unexpected obstacles are often met, and positions are rarely what they seem from a distance. It is therefore always advisable to reconnoitre more or less thoroughly the ground to be passed over and the position to be taken up. Usually the adjutant and range takers can perform these duties, but occasions will occur when the colonel commanding should personally examine the position. No halt to prepare for action should ever be made; in the previous position everything should have been made ready before limbering up.

The C. R. A. should now exercise a watchful supervision of the whole. His independent position and his close relations with the General-in-Chief will enable him to foresee dangers, and seize advantages which would otherwise pass unheeded. He should take active

* NOTE.—In the October 1893 number of the Royal Artillery Institution Journal there appeared a translation from the Russian of General Dragomirov, in which it noticed that in some manœuvres under his command, a battery "when charged by cavalry, countercharged with its limbers." This idea of charging with limbers, wagons or guns, in position or on the march, has much to commend it. I have little doubt, but that this mode of defence, will in the next wars be tried, and it will probably add much to the confidence of artillery.

measures, that the ammunition supply shall not fail at the supreme moment. He should anticipate success by organizing in good time the pursuit.

Having thus sketched what appears to me the essential points in fighting massed batteries, I will now examine the special features of peace training, which these conditions appear in addition to require.

It is most unfortunate that the results of the artillery fire factor should never be apparent at manœuvres. However well handled the artillery may have been, the enemy will, if allowed, totally ignore its fire effect, and consider himself ill-used if required by umpires to accept losses. It follows from this that the time which is needed for the artillery duel is generally slurred over, and the action of artillery to a great extent restricted and effaced. To make any show at all the artillery has to keep moving with the infantry, and if it gets into action ahead of the infantry as likely as not falls into unexplored dangers, and is blamed for consequent losses. For this reason, and others which do not enter into the scope of this paper, we believe that manœuvres would afford far more profitable instruction, if they were separated into four phases, each strictly demarcated by time and topographical boundaries.

The 1st phase would be reconnoitering and the preliminary advance.

2nd phase, the artillery cannonade and the formation of infantry lines of attack.

3rd phase, the infantry attack supported by artillery.

4th phase, storming the position and pursuit.

Another prolific cause of irregular handling of artillery, is due to the C. R. A., with the small artillery forces seen at our manœuvres, being usually an officer of inferior rank. His position and status as C. R. A. are more or less ignored, he is ordered to take two guns here and two guns there, more like a corporal of a guard than a commander of a technical arm. The C. R. A.'s position is defined clearly enough by regulations. But, if in war he is to be held responsible for the proper handling of the artillery, it cannot be wise, that the mutual relations between the General-in-Chief and the C. R. A. should habitually be set aside, instead of becoming fixed by constant practice.

From what has already been said, it will be evident, that, in my opinion four gun batteries, and batteries without wagons fully horsed, are very imperfect organizations for training artillery.

The present tendency of uniting two or more batteries under a Lieut.-Colonel is undoubtedly a move in the right direction.

But more than this is required. If batteries are ever to act in mass, they must be brought together in large bodies and with other troops, be practised in deployments, the conveyance of orders, &c.

Little need here be said regarding mobility, as its importance is well understood by all ranks. It requires, however, much practice with the other arms, and an intimate knowledge of the conditions of active service, for an officer, when dealing with masses of artillery, to know how to spare his horses and men unnecessary fatigue.

Words of command should be reduced to a minimum, but the advocates of signals appear to us too exclusive in their practice.

A combination of both, according to the circumstances of the moment, gives the best results. Signals are not only useful in themselves, but they have a most valuable educational merit. They train the attention and powers of observation in all ranks in a marked degree.

The central feature in all training for war should be the cultivation of that individual intelligence, which insures prompt action under every possible contingency. Our aims have hitherto been too exclusively in the direction of set movements and precise drill, and as a result little can be effected without leading strings. The actual conditions of warfare require that this automatic action should be supplemented, in a considerable measure, by individual intelligence, and that men should be trained to act correctly without always needing explicit words of command. For example, circumstances require a great variety of formations in the preparatory position. Whatever the formation may be, column of route, sections or batteries, at close or open interval, one word of command "March" should suffice for the advance. When detailed words of command are expected, the greatest confusion often follows the simplest movement, wagons not knowing whether to go on or stand fast, trying to form line and then falling back, &c., &c., and every one shouting to put things right. To obviate all this it should be left to the section officer to tell off the wagons for the 1st and 2nd lines, they know best how the ammunition is packed, and which horses require sparing. The wagons of the second line should on no account move, till the fighting line has disengaged, and then the officer in charge will give any orders that are required. The last line of wagons have merely to stick to their guns (except when horse artillery is galloping) and avoid the manœuvring one so often sees, and which entails more fatigue to these teams than if they had been in the guns. If all this has been clearly explained to the drivers, and they have been taught to look out for themselves, no hitch whatever will occur. It is just the same forming up wagons to supply the fighting lines as long as it is attempted to reverse them by signal or word of command, delay confusion and danger result. But when the drivers know exactly what is wanted, and that they alone are responsible for getting placed without obstructing the battery, things will go perfectly smoothly.

The examples here given are a few of the more prominent which have come under the personal cognizance of the writer. But the same spirit of simplification should pervade all field manœuvres. To this end, quickness of eye, and perception,—a knowledge of all situations, and fearlessness to act promptly, should be inculcated in all ranks in various degrees. Irregularities of ground should be sought out, and men trained to make the best of them.

These remarks should not be construed to lessen in the least the value we attach to strict uniformity to be essential and that no addition or curtailment should be permitted in these matters. Any competent officer should at any moment and in any situation, be able to take over command of a strange unit, without causing the least misunderstanding or confusion. We consider further, that all troops should be

systematically tested in this manner, and that thereby weak points in drill will be brought to light as well as irregularities in methods of training. Explicit detailed commands are not adapted to all situations, in such cases orders should be used merely as cues, which must be executed with comprehension. In the German field artillery drill this distinction is clearly kept in view, and the Emperor in his introductory order says, "the latitude in instruction and application, which has been purposely left, is in no case to be materially restricted."

I will conclude with a summary of the chief points in training, which should come under the special care of colonels of horse and field artillery :—

1. The conveyance of orders laterally and to the rear.
2. Keeping touch with wagons and ammunition columns.
3. Reconnaissance and scouting.
4. Signalling.
5. Selection of positions.
6. Preparing for action in any possible formation.
7. Grouping ammunition wagons in selected positions.
8. Long advances in echelon, and in line of battery columns.
9. The defence of wagons and limbers in case of sudden attack.
10. Flank movements to re-inforce a distant part of position.

(Written in February 1894.)

RAJPUTS.

A BRIEF ACCOUNT OF THEIR ORIGIN, RELIGIOUS CUSTOMS, AND HISTORY, WITH NOTES REGARDING THEIR FITNESS FOR MODERN MILITARY SERVICE.

By Lieut. A. H. BINGLEY, Adjutant VII (D. C. O.) B. I.

PART I.—Origin. Early religious beliefs.
Caste. Existing religious beliefs.

PART II.—History.

PART III.—Difference between Rajputs and Brahmins, and between different classes of Rajputs. Prejudices caused by the Mutiny. Endogamy and Exogamy. Totem Worship. Establishment of a messing system.

PART IV.—Suggested divisions of the Rajputs recruiting ground. Clans to be enlisted. The Machinery of recruiting. Physique. Athletics. Regimental titles. Facings. Objections to over-localization. War training. Cooking utensils.

The history of the Rajputs, their origin, and the traditions of their race, are so inseparably connected with that of Hinduism, that it is impossible to consider one subject without constant reference to the other.

Setting aside the more fabulous accounts of their origin, it would seem their Aryan ancestors quitted their homes near the Oxus, at a period so remote as to admit of no historical computation, and slowly entered India, through the passes of the Suleiman and Hindu Kush ranges.

Unlike the Mahomedan invaders of later history, these Aryan colonists established themselves in India very gradually. About 15 B. C., their settlements were confined to the Punjab and the banks of the Indus. From thence they extended their conquests east and south, as far as the Sone in one direction, and the Vindhyan Hills in the other.

We have no very definite accounts of their manner of life. It is probable that they moved about in patriarchal communities seeking fresh pastures for their herds. We know that they were constantly at war, not only with the aboriginal tribes which surrounded them, but also among themselves.

The religion of the period was a simple worship of the elements, having for its divinities the forces of nature, *i.e.*, Surya, Agni, and Indra, or Sun, Fire, and Rain. Reverence was paid to the memory of famous

ancestors, sacrifices of food were offered up to the Gods, and the head of each family performed his own religious rites, without the intervention of a regular priesthood. Caste as we now understand it was unknown, and the sanctity of the Brahmins was not dreamt of.

The primitive faith of these times gave way to more elaborate beliefs. A definite religious system was thought out. Brahma was the Supreme Being, and creator of the universe. Agni, Indra, and Surya were outward manifestations of himself, created for the assistance of man, to whom a purely spiritual ideal was impossible. At the same time, animal sacrifices were introduced (particularly of the horse) necessitating the service of a special priesthood. In this we see the first indication of a Brahmin or sacerdotal caste.

The simplicity of the early religion was succeeded by a period of great doubt and speculation. Two creeds appear to have existed side by side, one all philosophy, the other all ritual. As in all decaying religions, simplicity and truth gave way to superstition and ceremonial;

and as the sacrifices became more elaborate, and the ceremonies more complex, there arose the need for a special priesthood—a class which could be entrusted with the conduct of religious offices, while the rest of the community carried on their ordinary avocations of war, trade, and agriculture.

This process of selection was in course of time extended. Special duties were allotted to special classes, until at length, seeing their opportunity in the increasing influence of their kind, the priesthood, in the code of Manu, succeeded in establishing caste, and successfully asserted the sanctity of their order.

From this point, Hindu society was divided into four distinct classes,—

1st.—The Brahmin or Priestly caste.

2nd.—The Kshattriya or Warrior caste.

3rd.—The Vaisiya or Trading and Agricultural caste.

4th.—The Sudra or Menial caste.

The three first named, were the castes which claimed a pure Aryan descent. In right of their twice born origin, they were the privileged wearers of the *Janao* or sacred thread.

The fourth or Sudra caste was composed partly of aborigines who by contact with the Aryans had to some extent adopted Hindu beliefs, and partly of the progeny of mixed marriages, which by the rigid exclusiveness of the caste system, were declared to be impure.

The Brahmins while arrogating to themselves the first place in the social scale, seldom laid claim to temporal rule; they preferred to delegate the business of ruling as of fighting to the Kshattriyas, who

from time immemorial have been not only the warrior, but also the governing class of Hindu society. As the ruling race, it became customary to call the Kshattriyas *Rajputs*, i.e., King's sons, the term being applied in course of time indifferently, not only to the chieftains and their families, but also to the clansmen who followed their banners.

The establishment of a distinct sacerdotal caste naturally tended to make the religion more dogmatic. The early conception of a Supreme Being, made manifest through the physical forces of nature, gave way to the mystic triad of Brahma, Vishnu, and Siva—the maker, preserver, and destroyer, round whom revolved a host of lesser divinities, and local and tribal heroes, who by a convenient expansion of principle, were allotted places in the Hindu Pantheon, with the status of minor gods. Thus Rama and Krishna, Kshattriya heroes of the Ramayan and Mahabhrata, who were probably warriors of repute in some tribal struggles, became exalted through various phases of hero-worship, until they attained the dignity of *avatars* or incarnations of Vishnu himself.

The deification of Hanuman, the Monkey god, may be accounted for in the same way. The Aryans habitually referred to the Dasys or aboriginal tribes, as “black complexioned, flat nosed, and “*monkey-like*”; thus Hanuman, who was no doubt a powerful Dasyu chief, and a very valuable ally to Rama in his expedition to Lanka, (Ceylon) became by popular tradition first a monkey general, and finally a monkey god.

At this stage of Hindu decay, there arose a great outcry against the tyranny of the Brahminical system. It was given to Siddharta,

commonly called Buddha, a prince of the Kshattriya caste, to preach a new gospel to humanity—the gospel of Buddhism, which disowned gods, priests, caste, and sacrifices, and gave in thier place a cold monotheistic morality, which was to be attained by asceticism, and the systematic renunciation of self.

As might be expected, a creed so hopeless, so passionless, and appealing so little to popular imagination, had little chance of finding permanent favour with the Indian people. After a struggle prolonged through many centuries, Brahminism resumed its old ascendancy, re-appearing with the old mythology and ritual, but infinitely more complicated than it had ever been before.

Under the new-Brahminism, there was a marked tendency to materialise religion. The gods became almost human; wives were provided

for them, Sarasvati, Lakshmi, and Kali, appear as the consorts of Brahma,

Vishnu and Siva. Caste was re-established, no longer with the four-fold division of the code of Manu, but with all the complicated subdivisions which exist to the present day.

In all these changes we trace the efforts of an astute priesthood to establish a popular religion. No section of the community was for-

gotten. Aboriginal tribes were conciliated by the adoption of their tribal divinities. Their totem,* tree, and

* The following definition of a “totem” is taken from Chambers’ Encyclopædia—“The ruder races of men are found divided into tribes each of which is usually named after some animal, vegetable, or thing, which is an object of veneration or worship to the tribe. This animal, vegetable, or thing, is the *totem* or *God* of the tribe. From the tribe being commonly named after its *totem* the word is also frequently employed to signify merely the tribal name.”

serpent worship, though utterly at variance with the teachings of the Vedas, were affiliated to the orthodox beliefs, and became part and parcel of the new religion.

Buddhism, in spite of the antagonistic nature of its doctrines, was disposed of in a similar manner. Gautama whose whole life and teaching had been a protest and revolt against the formalism of the Brahmins, was absorbed into the Hindu system, and as an incarnation of Vishnu was allotted a place among the minor gods. Thus step by step, by diplomacy and adaptiveness, the Brahmins consolidated their authority, and established a religion, which in spite of persecutions and political change, maintains its vigour to the present day.

An outline has been given in the preceding pages of the history of the Aryans as a separate nation. But from the establishment of caste this is no longer possible, for each caste has then its own history, entirely separate from that of the other. Before passing on to the annals of the Rajputs, it may be as well to consider the chief points which mark the Hinduism of to-day.

The modern religion, if such a term can be applied to a confused agglomeration of beliefs, ranging from theism to demon-worship, may be summarized under the following heads:—

- 1.—The worship of Vishnu.
- 2.—The worship of Shiva or Mahadeo.
- 3.—The worship of Shakta, or *Female Force*, as impersonated by the goddesses Kali, Radha, Sita, and Debi.
- 4.—The worship of the Sun.
- 5.—The worship of Ganesha.

The followers of Shiva recognise Shakta worship by the reverence of Kali or Durga. Vaishnavas do the same, but worship Radha, Sita, or Debi instead.

The various sects are recognisable by their peculiar caste marks. Worshippers of Shiva have a mark on the forehead. It consists of three curved lines like a half moon, to which it added a round dot on the nose. It is made of Ganges clay, or sandalwood powder, or the ashes of

Modern Hinduism, caste marks. cowdung. The mark of the Vaishnavas is two lines, rather oval, drawn the whole length of the nose, and carried forward into straight lines across the forehead. It is generally made with Ganges clay, sometimes with sandalwood powder. The Shakta forehead mark is a small semi-circular line between the eyebrows, and a dot in the middle.

The worship of Vishnu is very obscure. He is said to have appeared on earth in nine incarnations. The devotees of this sect generally reverence the *Avatar* or incarnation which they consider most propitious to their racial traditions or special requirements.

The symbol of Shiva worship is the *Linga* or phallus, the emblem of creative power. As Mahadeo, his worship is associated with the image of Phallic worship. his constant companion, Nandi, the sacred bull,

Rajputs are generally followers of Shiva, but pay special reverence to his wife, who as Kali or Durga, is the patroness of war and blood-

shed, and the special guardian of the warrior race. Shiva worshippers may eat meat; Vaishnavas are not permitted to do so.

The worship of the Sun, a Vedic survival of the greatest antiquity,

Sun worship.

is also in special favour among Rajputs, especially in Rajputana and the western districts. Surya the Sun god is generally regarded as a manifestation of all three persons of the Hindu trinity. In the east, at morning, he represents Brahma or Creation; overhead at noon, he typifies Vishnu or Preservation; in the west at evening, Shiva or Destruction.

Ganesh as the god of Good Luck, and the remover of difficulties, secures the reverence of all classes. He must be propitiated whenever any important business is to be undertaken. He is presented as a short, fat, red-coloured man, with an elephant's head, and is really only a Household god, but a very important one.

Besides the above, Hindus reverence cows, heroes such as Rama and Krishna, the great rivers such as the Ganges, Jumna, and Narbudda, and various tribal deities. With the fetishism of the lower castes, are associated the reverence of trees, plants, and serpents, also the godlings of nature and disease.

PART II.

HISTORY.

Rajputs are now divided into about 400 clans or sub-divisions, 36 of which are singled out by Tod in his "Annals of Rajasthan," as "royal" clans. The primary division of the Kshathiya order, according to tradition, was two-fold, and consisted of the Solar and Lunar Races, to which were afterwards affiliated the Agnicular or Fire Tribes.

The capital of the Solar Race was at Ajudhya (near Fyzabad, Oudh) and their great hero was Rama, whose exploits extending from the north of India to Ceylon, form the subject of the Ramayan, the first great epic of Hindu literature.

The capital of the Lunar Race seems to have varied. Prag (the modern Allahabad) Muttā, Dwarika

The Solar and Lunar Races. (on the Katthiawar Coast) Hastinapura (near Meerut) and Indraprastha (near modern Delhi) appear to have been their chief cities at different times.

Passing from epic to historic periods, we find that in ancient days, the Rajput principalities were India's stoutest bulwarks against foreign invasion. Kshattriya armies under Porus, opposed Alexander and his victorious Greeks. The Arab invaders of Sind in the 5th century, were expelled by Rajput heroism. Every Mahomedan invader has had to reckon on Rajput opposition, and the effectiveness of their early resistance is testified by the fact that as the result of 17 invasions of India, and 25 years of incessant fighting, the conquests of Mahmud of Ghazni were limited to the western Punjab, though his raids extended as far as the Rahtor fortress of Kanauj on the Ganges.

But while the pressure of Central Asian tribes seeking outlets in more genial lands, tended to render each wave of Mahomedan invasion more formidable than the last, the Hindu power of resistance grew gradually weaker, chiefly owing to the dissensions and rivalries of the Rajput Princes.

In 1191, Muhammad of Ghor was utterly defeated by the Rajputs at Thanesar, but returning two years later, he was able to crush them in detail, overcoming Prithwi the Chauhan Raja of Delhi in 1193, and the Rahtor King of Kanauj in the following year. So decisive was the

defeat of the latter, that the Rahtors abandoned their homes near Kanauj, and migrated to the districts bordering on the Bikanir desert, where they founded the military kingdom of Marwar, which survives to the present day.

The subsequent history of the Rajputs during several centuries, shows them to have been in a chronic state of warfare with Mahomedan Kings of Delhi. From 1268 to 1287, during the reign of Balban, the last of the slave dynasty, the Rajputs of Mewat were nearly exterminated: 100,000 souls are said to have been put to the sword.

The reign of Ala-ud-din Khilji (1295 to 1315) was marked by fresh campaigns against the Rajput kingdoms. During this period, the Sissodia clan was all but destroyed and the two great fortresses of Rantambhor and Chitor fell into the hands of the Musulmans. The garrison of Chitor after a prolonged and heroic defence, preferred to die rather

than surrender. The men rushed on the swords of the beseigers, while the Queen and 13,000 women sacrificed themselves on the funeral pyre.

While these events were taking place in Rajputana, there seems to have been a great wave of Rajput immigration into Oudh, from which outlying colonies were pushed forward as far to the east as Bhojepore. The best clans in Oudh and the N. W. Provinces nearly all fix the 13th century as the period of their separation from the parent stock. Some Oudh Rajputs, were settled there in Vedic times. Others are no doubt directly connected with the western clans, and a large proportion are the descendants of scattered bands, which here and there escaped the pressure of the Mahomedan conquests. But it is more than probable that many clans are of doubtful descent, and have sprung from Rajputs

The Rajputs of the Oudh and the N. W. Provinces. who married low-caste Hindu women, or the females of non-Aryan tribes, such as the Bhars. They are in fact often descended from congeries of various tribes, which from being collected under the leadership of a Rajput warrior, were accorded a tribal name, and in course of time borrowed the pedigree of their founder, as a convenient explanation of their origin.

The petty Rajput chieftains of Oudh and the N. W. Provinces, were always at strife with the Mahomedan Governors sent from Delhi, and gave the Imperial officials constant trouble. Nominally subject to the Mahomedan kings, they were practically independent, for so

long as they paid their tribute to the Imperial treasuries they were left to their own devices, and permitted to settle their private feuds in their own fashion. But though they preserved a sort of feudal freedom which the Mughal Emperors found it expedient to recognise, they never had sufficient national feeling, or community of interests, to combine in an organised opposition to the Mahomedan power. They never attempted anything like the fierce resistance of their western brethren, though quick to take advantage of the weakness of the Mughal dynasty, in the latter days of the Empire's decay.

In 1527, a coalition of the Rajputs of Chitor, Malwa, Mewar, and Ajmere, opposed the Mughals under Babar, but were defeated with great loss at Futehpur-Sikri. Though worsted, the Rajputs maintained their independence till the reign of Akbar, when their subjection to the Mughal throne was completed.

Akbar's success in winning over his Rajput opponents, was due rather to diplomacy, than to actual triumphs in the field. The great Emperor early realised, that for his dynasty to keep its hold on India, it must depend largely on the loyalty of Hindus, whose confidence he sought, and won, by a broad minded policy of conciliation and religious tolerance.

The marriage of Akbar to the daughter of the Rajput Raja of Jeypore, made the latter, and his famous nephew Man Singh, the most trusty supporters of the Mughal throne. The Rajput soldiery, from bitter foes, became the thews and sinews of the Imperial armies, and carried the victorious banners of the Emperors from Kashmir to the Deccan, and from Kabul to Behar, and even further, to the scarce known jungles of Assam.

The religious tolerance and statesmanlike policy of Akbar and his immediate successors, gave way to the fanaticism of Aurangzeb. This prince, himself a devout Moslem, had no sympathy with the broad minded views of his predecessors, which to him were mere manifestations of heresy, and backslidings from the written law of the Prophet. In 1677 he revived the *Jazia*, or poll-tax on Hindus, and by this and other coercive measures, drove the Rajputs into revolt. The Hindu chivalry which had so loyally served three successive Mughal kings, was alienated for ever, and from a pillar of strength, became an element of ruin.

From the death of Aurangzeb in 1707 began the gradual break up of the Mughal Empire. Provincial Governors asserted their independence, and in the general dismemberment, the Delhi sovereigns became mere puppets in the hands of a Mahratta confederacy. While the crumbling authority of the Delhi Emperors was being directed with barbarous cruelty against the Sikhs of the Punjab the Hindu Princes of Rajputana were shaking off the Mughal yoke. By 1715 they were practically free.

Between the years 1715 and 1818, the Rajput States suffered from the incursions and depredations of the Mahrattas and Pindaris. On the final overthrow of the former, in 1818, by the British, the Rajput Princes, confident in the good faith of the English Government, accepted by treaty, the position of feudatories, and have since served the Empire with the same steadfast loyalty which characterised their relations with the Emperor Akbar. Under the modern system of Imperial service troops, the Princes of Rajputana can now render to their Suzerain, that military service which won such renown for their ancestors, and is so thoroughly in accord with the martial traditions of their race.

The fighting qualities of the Rajputs reached their highest development in the wars of the Mughals. Their bearing in action is thus picturesquely described.*

The bearing of the Rajput in action.

"They were born warriors, the bravest of the brave, urged to fury by a keenly sensitive feeling of honour, and always ready to conquer or die for their privileges. To see the Rajputs rush into battle, maddened with *Bhang* and stained with orange turmeric, and throw themselves recklessly upon the enemy in a forlorn hope, was a spectacle never to be forgotten. Had the Rajputs combined their forces it is doubtful whether any Mughal army could have stood long against them."

The Rajput weapons were the shield and tulwar. The Mahomedan historians constantly refer to the "*lakh turwar Rathôran*," the "100,000 swords of the Rahtors," to which the Mughal Emperors were indebted for half their conquests. Each soldier was also provided with a bow

Rajput weapons. and arrows, but these again were abandoned in favour of matchlocks, when the use of fire-arms became general. While the "Desi" Rajput of Rajasthan was par excellence a horse soldier, his Hindustani confrère, under European supervision, developed a corresponding capacity for fighting on foot. The Rajput horsemen excelled in the use of a short lance which they handled with remarkable dexterity; but despite their valour, they could make but little impression on the disciplined battalions of Scindia, which trained by DeBoigne on the European system, were composed not only of Mahrattas but also of Rohillas and Hindustani Rajputs, and other military classes from northern India.

Rajputs were particularly addicted to *Sati*, or the self-immolation of widows, on their husband's funeral pyres. Lord George Bentinck suppressed the practice in the British Territories in 1829, but the custom, though happily now abandoned, lingered on, for some years later, in Rajputana and Bundelkhand.

The caste law, which compels Rajputs to marry their daughters into clans higher than their own, is a fruitful source of trouble, and causes pecuniary embarrassments to many, owing to the heavy outlay in dowries and marriage expenses, considered indispensable for the

* "Aurangzeb," Rulers of India Series—Sir W. Hunter.

honour of the house. Thus a family of daughters means in many cases, absolute ruin, and female infanticide was in consequence at one time very prevalent, and even now is not altogether unknown, especially in certain districts.

Sleeman, in his "Rambles of an Indian Official," makes the following reference to this crime :—

"After the murder of every infant, the family considers itself an object of displeasure to the Deity, and after the 12th day, they send for the *Parohit* or family priest, and by suitable gratuities, obtain absolution. This is necessary whether the family be rich or poor, but when the absolution is given, nothing more is thought or said about the matter. The lower clans who can unite their daughters to those of higher grade, commit less murders of this kind than others, but *all* Rajput clans are more or less addicted to female infanticide. It was the dread of sinking in substance from the loss of property, and in grade from loss of caste, that alone led to the murder of female infants."

The Rajputs of our army are mostly yeomen, cultivating their own lands. But though nearly all are addicted to agriculture, there is among most clans a rooted aversion to the actual handling of the plough, which is considered a menial and degrading office.

Traders are seldom found among Rajputs, but many, especially in the western districts are engaged in horse-breeding and bring their young stock for sale to the great Horse Fairs in the cold weather.

PART III.

Differences between Brahmins and Rajputs and the various classes of the latter.
Endogamy and Exogamy. Messing.

In spite of the Aryan origin which they share in common, Brahmins and Rajputs are now widely divided. The great social superiority accorded to the former, in most parts of India, cannot be ascribed entirely to religion or priestcraft ; for the real cause other reasons must be sought.

It is a remarkable fact that where the Rajput is powerful, and of undisputed lineage, he accepts the Brahmin as a necessity, but declines to consider him a superior in aught but a spiritual sense. At sacrifices, marriages, deaths, and for casting horoscopes, the Brahmin is indispensable. As a *Parohit* or family priest, his advice is sought for, especially by the women, but meddling interference is not tolerated, and his sphere of influence is always restricted within reasonable bounds.

The Ranas of Mewar, as the vice-regents of Shiva, supersede the High Priest when they visit the temple, and can actually perform all ceremonies without Brahminical assistance. Todd, the historian of the Rajputs tells us that "a Rajput worships his horse, his sword, and the Sun, and attends more to the martial songs of the bards than to the litanies of the Brahmins."

In Rajputana, where the ancient families retain their territories, and rule with much of the feudal splendour of former days, Brahminical influence is comparatively at a discount. The Rajputs of these parts need no fussy memorials to vindicate their dignity; they leave such matters to their eastern brethren, who cannot justify their claims to such flawless pedigrees. The Rajput of Rajputana is as free of prejudice as a Sikh. "He slays buffaloes, hunts and eats the boar and deer, and shoots ducks and wild fowl." He will drink from a *masak* and take food with little enquiry as to who has prepared it; moreover he will dispense with all the stripping and washing preliminaries, so dear to the Rajput of Hindustan. The difference between the two sections of the race, in this respect, is very remarkable, and calls for special explanation.

After the fall of Kanauj in 1194, the centre of Rajput influence and authority, was shifted from the banks of the Ganges, to Rajputana; and it is possible that the scattered remnants who remained, and the colonists who afterwards joined them, having probably married Hindu women of low caste, or the daughters of non-Aryan races, were only permitted to retain their status as Kshattriyas, by the connivance and good will of the Brahmins, who thereby obtained a hold over their neighbours, which greatly strengthened their influence and power.

Another likely explanation is that most of the great Hindu shrines are either in or near the Ganges valley, and the sacred stream, as the focus of Hindu religious life, would also be the centre of Brahminical activity and influence.

The difference between the Eastern and Western Rajputs accounted for.

As has already been explained, the terms Rajputs and Kshattriya are practically alternative. The former may be said to be the social, and the latter the religious denomination of the race. All Rajputs add "Singh" to their names, and are frequently referred to as "Thakurs," especially by inferiors.

If the Rajputs of Rajputana can be recruited for our regiments, we have in them fighting material, not to be* surpassed in Asia. Unfortunately, the "*Desi*" Rajputs care very little for infantry work. Strongly attached to their hereditary chiefs, they have no desire to join our colours. Service in the cavalry is more attractive, but it can scarcely be called popular, for of those who serve, but few are Hindus, (and these chiefly from the Hurriana district in British territory) the majority being *Rangars*, or Rajputs whose ancestors abandoned their original faith, in favour of the creed of Islam. The Imperial Service troops absorb many of the most eligible men; some take service in the Bombay army and in local corps; but the number who join our Bengal regiments is very small, in fact of the seven Rajput corps in our army, only one, the 13th B. I., recruits in Rajputana: all the rest come from Oudh and N. W. Provinces.

* The Rajputs of Rajputana and the Eastern districts of the Punjab, call themselves "*Desi*" Rajputs, and call those of Oudh and the N. W. Provinces "*Purbiah*" Rajputs.

It is very desirable that another Rajput battalion should be raised as a link to the 13th B. I. For convenience, the new regiment might be called the 41st. The 13th is at present linked to the 6th and 10th, both composed of Jats, a temporary makeshift which has little to recommend it.

But after allowing for the legitimate claims of the Bombay army to recruit from the southern and western states, the Rajputana recruiting ground could not supply the cadres of more than two infantry battalions. Men are to be had no doubt, in some numbers, but not on the terms we offer. The Rajputana Thakur is not prepared to sacrifice his independence for seven rupees a month. If more Rajputs are wanted, they must necessarily be recruited elsewhere.

Fortunately, we have in Oudh and the North-Western Provinces, an almost inexhaustible field of selection. In spite of the "Pax Britannica," the Rajputs of these parts are still eager for military service, and although it has grown the fashion of late years to depreciate their value, and to set them aside in favour of Sikhs and Punjabis, they are none the less admirable soldiers, and with good leading, sound training, and officers who know and trust them, they are still capable of rendering just as good service as any other race recruited in India.

It must be remembered that with the annexation of Oudh and the Punjab, the martial races of India lost their essentially warlike character. The peace and good government which came in with the British Raj, turned the soldier into an agriculturist, and this process has operated with just as much effect on the

Decay of the warlike spirit in India. Sikh, as it has on the Rajput. Of all the Asiatic races now serving under

our colours, Pathans and Gurkhas are the only two which can really claim to be warlike; both of these classes belong to independent nations, beyond our border, which but for the restraining influence of the British dominion would regard India as a fair field for loot.

Such being the case, it seems unfair that one recruit-giving race should be unduly exalted over another, on the mere plea of its being more warlike. Efficiency in the field must always depend on organization; training, and discipline, rather than on mere skill in the use of arms, acquired prior to enlistment; and provided that the men are of good physique and good courage, there is no reason why the various military classes of Hindustan should not render just as good service as the men of the Punjab, or even of our northern border tribes.

Under the new organization of class regiments, a great impetus has been given to *esprit de race*. To each regiment is now entrusted the military reputation of the class which it represents, and in this sentiment, we have a moral factor which cannot fail to be a powerful aid to efficiency.

To no class are these observations more applicable than the Rajputs of Hindustan. Soldiers by tradition, and taught by their religion to regard the profession of arms as their legitimate occupation, and descended from the sturdy sepoys who under Clive and Lake, laid the founda-

tions of our Indian Empire, they form a military caste which properly handled should render invaluable service to the State.

Much of the prejudice which exists against Hindustanis, is due no doubt to the events of 1857. But now that time and historical research has thrown light on many of the causes which led to the Mutiny, the misconduct of the old Bengal army is better accounted for, and we learn that other motives besides religious fanaticism gave rise to the great revolt.

The acquisition of one native state after another, by the British power, caused disquiet among the ruling classes, but the climax was not reached until Oudh was annexed, when a blow was struck at the power of the great landholders. The Prejudices caused by the Mutiny. latter, mostly Rajputs, had grown powerful and wealthy under the misrule of the Oudh kings. They knew that the license which they had enjoyed under the native government would not be tolerated under the rule of the East India company, and they were ready to join in any political conspiracy which could contribute in any way to the restoration of their former independence. Most of these great landholders were chiefs of clans, and their Rajput tenants who filled our ranks, owed them an allegiance, which was far more binding to the majority than any formal undertaking of fidelity to their colours. The political wire-pullers of the time knew this, saw their opportunity, and taking advantage of the lax state of discipline in the native army, incited a revolt by playing on the easily roused fanaticism of the men, and persuading them that their religious liberties were at stake.

Sleeman in his "Rambles of an Indian Official" describes the close sympathy which existed between the Rajput yeomen and their landlord chieftains in the following words:—

"In no part of the world has the devotion of soldiers to their immediate chiefs been more remarkable than among the Rajputs, and in no part of the world has the fidelity of these chiefs to the paramount power, been more unsteady, or their devotion less to be relied on. There is hardly a single chief of the Hindu military class in Bundelkhand, or the Gwalior territories, who does not keep a gang of robbers of some kind or other and consider it a valuable and legitimate source of revenue.

Oudh before the annexation. It is much the same in the kingdom of Oudh, where the lands are for the most

part held by the same Hindu military classes, who are in a continual state of war with each other and the government authorities. Three fourths of our native infantry recruits have been trained up in this school of contest. A braver set of men is hardly anywhere to be found."

The above was written in 1844, and it gives a faithful picture of the condition of Oudh at the time of the annexation. It is not to be wondered at, that landlords and tenants who had for generations earned handsome incomes by the licensed brigandage permissible under the Mahomedan kings, should resent the introduction of a government which insisted on the maintenance of law and order, and enforced the punctual payment of the land revenue.

Another reason for the disfavour which the Hindustani soldier has fallen into of late, is his rigid adherence to caste ceremonies, even under circumstances where their observance is obviously injurious to health and efficiency.

The Rajputs of Hindustan, from constant association with Brahmins, have absorbed many of their prejudices, and so long as the two classes served together, every effort to relieve the former from ceremonial tyranny, was steadily thwarted by the stolid *non-possumus* of the priestly caste. But with the establishment of class regiments, a new era has commenced, and in spite of the proverbial conservatism of the people, there is no doubt that with tact and patience, the Rajput may be induced to abandon *on service* nearly all those prejudices which militate against his value in the field.

Brahmins by themselves, have on numerous occasions proved their gallantry and steadiness, but there is no doubt that their influence in a regiment is as injurious to discipline as it is to efficiency, and the full measure of improvement will not be secured in our Jat and Rajput corps until the last Brahmins and Bhuinhars have been eliminated from their ranks.

Bhuinhars are a peculiar class, found chiefly in the eastern districts of the North-Western Provinces. Popular belief accords them a mixed origin, and declares them to be the descendants of Brahmins by Rajput women, and vice versâ. In any case their customs are distinctly

Brahminical as they wear the Brahmin *janao* or sacred thread, and bestow the *asirbad* or Brahminical blessing. They are a troublesome class and are sometimes enlisted in our Rajput regiments by mistake, for like the Kshattriyas they add "Singh" to their names, and owing to many of their sub-divisions being known by the same titles as Kshattriya clans, they occasionally succeed in concealing their true caste. For example, a Kinwar Bhuinhar will often pass himself off as a Kinwar Rajput, though as a matter of fact, the two classes are essentially different.

The most salient point of difference between Brahmins and Rajputs, lies in their marriage customs. Brahmins are *endogamous*, i. e. they must marry within their clans; Rajputs are *exogamous*, i. e. they must marry into clans *other than their own*. Besides the above, both Brahmins and Rajputs, in common with most respectable classes of Hindus, bar marriage within the following degrees of kinship:—

- Chachera.....the paternal uncle's family.
- Mamera.....the maternal uncle's family.
- Phuphera.....the paternal aunt's family.
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The endogamous habits of the Brahmins are explained by the fact, that as the priestly and educated class, specially charged with the reading and interpretation of the Hindu scriptures they naturally spared to effort no confine their knowledge to as few people as possible. In no way could they do this more effectively, than by restricting their marriages to a certain sphere and raising themselves on a pinnacle of social and religious exclusiveness.

In explanation of the exogamous habits of Rajputs, it has been suggested that as the Kshatriya communities increased, and split up into clans, tribal quarrels caused a need for expansion, and distant campaigns were undertaken against the aborigines, leading to the establishment of remote settlements in the midst of hostile populations.

In these desultory wars, the women accompanied their relatives, and must have died in large numbers from hardships and exposure. Thus situated, the Kshatriya emigrants often found it difficult to marry and were compelled to seek wives, either by forcible capture from other Rajput clans, or by mesalliances with the daughters of aborigines whom they had subdued. It is probable that the practice of marriage by capture, resorted to in the first instance from sheer necessity, was thus gradually developed until it attained the force of a tribal law.

Another likely explanation may be found in the totemistic tendencies of certain clans. Kshatriya warriors, as pioneers of civilization amidst masses of aboriginal savagedom, occasionally contracted irregular alliances with the daughters of the inferior race. Now it is the well known custom of many savage tribes to regard all persons reverencing the same totem as brothers and sisters; it will therefore be understood that a Kshatriya clan which had lived in contact, and perhaps partly intermarried with, totem-worshipping aborigines, would be inclined to adopt some of their ideas, and would thus come to regard marriage within the clan as *incest*. Many Kshatriya clans have a tribal totem—*e. g.* the Bais who venerate the cobra, the Kachwahs who venerate the tortoise, and the Kalhans, who venerate the *Kala Hans*, or black goose.

The laws of endogamy and exogamy have been discussed at some length, for on their application, depend questions of the highest military importance.

Orthodox Hindus divide food into two classes—

“Pucci,” *i. e.* food cooked in ghi.

“Kutchi,” *i. e.* food cooked in water.

Pucci, as a rule, can be taken by both Brahmins and Rajputs from any one. Puris and the unwholesome-looking delicacies hawked about by Hindu restaurateurs on the platforms of Indian Railway stations, come under this heading, and are purchased by all classes without loss of caste. Kutchi, on the other hand, must be cooked at the *Chokar*, either by the man who eats it, or by his own near relations. It is in

the interpretation of this rule that Brahmins and Rajputs essentially differ. For the Brahmin there is no means of escape. Unless he can get his father, mother, wife, brother, or sister, to prepare his food, he must prepare it himself. A Kshattriya is not so hedged in by restrictions; he not only can take food cooked by *anyone belonging to the same section of his clan as himself*, but also when prepared by *anyone of any clan which habitually intermarries with his own*. Thus while the establishment of messing groups is rendered feasible by the exogamy of the Rajputs, the endogamy and exclusiveness of the Brahmins renders all progress in this direction an utter impossibility. In other words while 25 Rajputs of allied clans will feed together and share a common set of cooking pots, a similar number of Brahmins would have to feed apart, and each man would require a separate *batterie de cuisine*. Moreover although the grouping together of certain clans greatly facilitates the establishment of messes, it is by no means a *sine quâ non*, for as *all* Rajputs can take food prepared by a Brahmin, the scruples of the most orthodox can be overcome by providing Brahmin cooks for each company.

The question of water-supply is more difficult. Western Rajputs

like Jats will drink from the *masak* without hesitation, but Hindustanis

have a rooted aversion to the water skin in any shape or form. The more enlightened men say that canvas or goat-skin *chagals* could be used on service, if handled by Hindu water carriers. But on the whole copper water vessels, specially designed for mule transport, would seem better suited to their special requirements. Aluminium water tins would be still preferable, being so much lighter.

The adoption of a Magazine Rifle of small calibre, undoubtedly

Necessity for light equipment to allow for carriage of more ammunition.

necessitates, a large increase in field ammunition reserves, and to provide the necessary transport, every effort must be made to reduce personal baggage to a minimum. Bearing this in mind, the relative value of the different races serving under our colours will depend largely on the length of their baggage trains; the best troops will be those with the least impedimenta; thus the question of cooking pots becomes one for serious consideration, particularly in Hindustani regiments. It must be distinctly understood that although Hindustani Rajputs can and do mess with their fellow-tribesmen, *they are most averse to do so in cantonments*, and so long as they serve with Brahmins and Bhuinhars, they will utterly scout the idea. It is only since the reorganization into class regiments that a scheme of messing has become feasible *for field service*, and even now, it can only be pushed forward by degrees, as the men themselves learn to appreciate its many advantages.

To establish a system of messing, the essential condition is to group your material together, in such a manner as to ensure each company being composed of men of the same sub-divisions of clans, or of others

How companies should be organised to allow of the introduction of the messing system.

with which they habitually intermarry. Great care must be taken in recruiting. Recruiting parties should be instructed from what clans to enlist, and the lat-

ter should be selected, so as to complete each unit with recruits of the same class as the sepoys already in its ranks. Working on these lines, two or three messing groups would soon be organized in each company, and we should eventually attain the ideal section, the tactical and administrative unit complete in itself, and able to go anywhere at the shortest notice.

The importance of this point cannot be overlooked. In our small campaigns, particularly in countries like Burma and Lushai land, convey and escort duty, and many other minor operations of war such as the patrolling of roads and telegraphs, fall to the lot of small parties of native infantry. Men employed on this service are often caused needless hardship when detached from their companies through faulty arrangements in the matter of food and cooking pots. In this, as in most problems of a military nature, decentralization is required. The section, which is now a tactical and administrative unit, must also be the *cooking unit*, and the section commander should be responsible for the feeding as well as the fighting of his men. To do this, section cooking pots must be provided.

Many officers who have served in Hindustani regiments, will tell us that the introduction of a system of messing among any but Jats and Western Rajputs is utterly impossible. That such is the general belief we are bound to admit, all we can say is that the practicability of establishing messes has been actually demonstrated in one* regiment, and that if it can be done in one corps, it should be feasible in others, provided they are recruited from the same class. After carrying out some successful experiments in this direction, in a small column, composed entirely of Rajputs, which took part in the cold weather operations of 1891-92 in the Chin Hills, it was decided to take advantage of the reorganization of last year, by re-grouping the transfers and existing material of the regiment, in such a manner as to ensure men of the same sub-clans, or of others connected therewith by marriage, being placed together as much as possible. After some time had been allowed to elapse, so as to enable the men to get to know each other, the native officers reported that messes could be established in five out of the eight companies. Some sets of squad cooking pots were designed, made up in Cawnpore, and issued to a company of each wing. The officers then proceeded by invitation to the cook houses, and there saw the best part of two companies formed into large groups. Each group prepared and ate its food there and then, one man after another being called out to perform the duties of cook. The men thoroughly entered into the spirit of the thing, and *chapatis* were baked, and the *dāl* ladled out of the degchies, with the best of good humour, and without the smallest objection on the part of any one. When questioned as to how the system worked, several men spoke up, and said that they saw its advantages and importance for *field service*, and the economy which it would cause in the matter of fuel, but that they would not like it in *cantonments*. They disliked the formality of having to assemble at a

* 7th (D. C. O.) Bengal Infantry.

fixed hour for their food, and each man liked to arrange his own bill of fare, to suit his own particular taste. Most Europeans marvel at the monotonous regularity with which Hindus eat the same food day after day, with no change to speak of, but as a matter of fact they vary their diet more than we generally suppose. A man eats a *chapati* one day, and a *puri* the next; he uses different kinds of vegetables as a seasoning to his food, to say nothing of little refinements in *chapati* making, which may result in anything from a doughy slab, to a crisp wafer.

The companies in which this experiment took place were at that time only about 70 strong. Taking one of them for example, we find from the squad rolls that it was divided into six messing groups.

No. of the Group.	Number of men.	CLAN COMPOSITION.
I.	20	Bais (Tilokchandi) Chauhans (Mainpuri) Rathors, Bhadauriyas (Gwalior and the Chambal) Kanhpuriyas.
II.	20	Bais, Gautams, Dikhits, Sengars, Kachwahs (Oudh.)
III.	10	Bais, Kanhpuriyas, Amethiyas, Bandalgotis.
IV.	12	Katiyars, Gahalwars, Bachals, Sombansis (of the N. W. P.) and Solankis.
V.	2	Two insignificant groups.
VI.	2	
Total....	66	

The remaining four men were solitary individuals who professed to be very exclusive, and had to cook for themselves. At the end of six months the company had been increased up to a strength of 95. The recruits enlisted had been carefully selected so as to complete each messing group with *rotihas*, or men who could feed together. The messing composition of the company was then as follows :—

No. of the Group.	Number of men.	CLAN COMPOSITION.
I.	20	Bais, (Tilokchandi) Chauhans, (Mainpuri), Rathors, Bhandauriyas, Kahnपुरiyas.
II.	20	Bais, Gautams, Dikhits, Sengars, Kachwahas, (of Oudh.)
III.	20	Bais, Kanhpuriyas, Amethiyas, Bandalgotis.
IV.	16	Katiyars, Gahalwars, Bachals, Sombansis, (of N. W. P.) and Solankis.
V.	8	Chauhans (of Oudh.)
VI.	8	Pondirs, Ponwars.
Total ...	92	

This left three men who had to cook separately. Of the original four, one had discovered a mess which he could join in another company he had accordingly been transferred thereto.

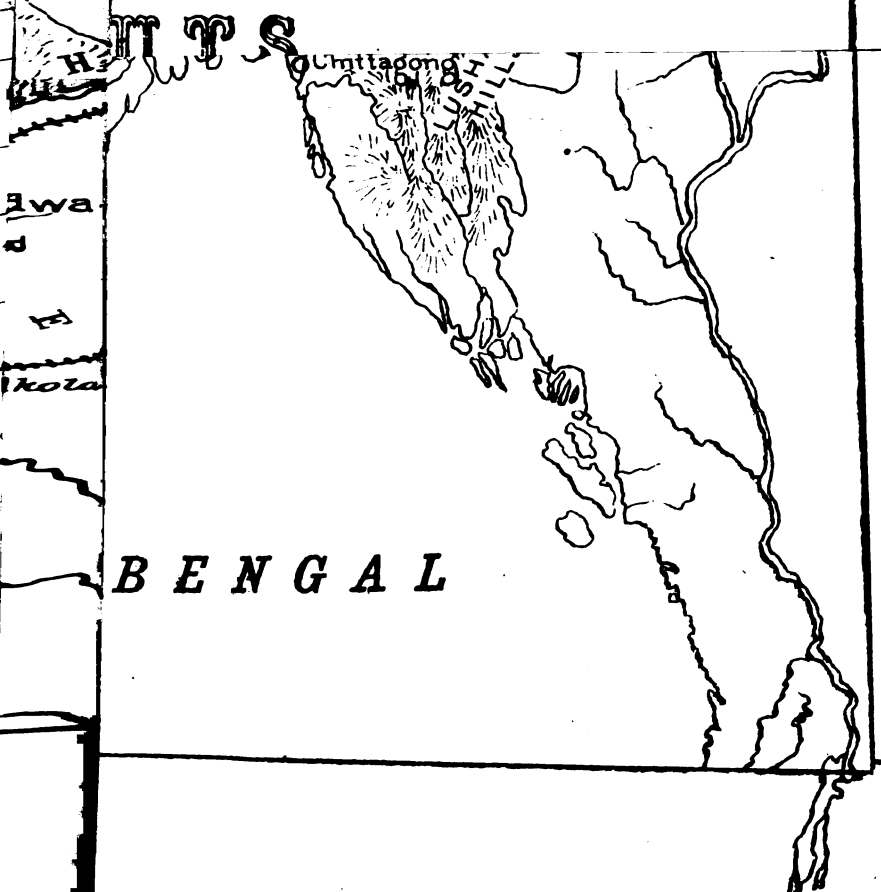
The process above described, is still going on. For want of a better name it may be called the "*Khandan system*," or the grouping together of men who by caste custom, are permitted to take food prepared by each other. As vacancies occur in companies they are filled up by recruits belonging to sub-clans already represented therein, or connected with one another by marriage, as to allow of a mess in common.

Applying this organization to other companies, it at once becomes apparent that to establish a system of messing, all that is required is time, and careful recruiting. Opposition must of course be expected for the Hindustani hates change, and is always prepared to passively oppose it. But just as the old reluctance of Hindustani troops to serve across the sea has been overcome, and the men accustomed to maritime expeditions by the capture of Bourbon and Java, and our campaigns

MAP

INDIA

H. BINGLEY'S PAPER





Burma, China, and Egypt, so may we hope, by the exercise of tact and patience, to remove such scruples with regard to food and cooking pots as stand in the way of the efficiency of these troops on service. To attain this object, we must work through the more intelligent and better educated of our native officers, and more especially those who in addition to the respect secured to them by their military rank, possess some local influence among the families of their Rajput sepoys. It is of great importance that there should be in every regiment a few native officers of good family and independent means, holding direct commissions. The influence of such men, particularly if they are well educated, is most valuable, and goes far to counteract the conservatism and tendency to work in grooves which is so characteristic of even the best native officers whose training has been purely in the ranks.

PART IV.

Suggested Rajput Recruiting Areas, Machinery of Recruiting, Physique, Athletics, Regimental Titles, Danger of over-localisation, War Training.

The term Rajputana is at present restricted to the States lying between the Jumna and Narbudda, of which the Jumna forms the Eastern boundary. But in ancient days Rajput Princes ruled over all the territories now known as the Gangetic Doab, as well, with outlying settlements in Oudh and the Eastern districts, of Benares and Bhojapore.

The Rajput recruiting grounds may now be said to extend from the Himalayan Tarai in the North, to the Vindhyan mountains and the Narbudda in the South; and from the Cutch and Kathiawar coast in the West, to the Bhojapore district in the East. For recruiting purposes this vast tract may be divided into four portions:—

Area.	Name.	Comprising following States and Districts.
I.	Western and Southern Rajputana.	Cutch, Kathiawar, Jodhpore a portion of Bikanir, Jeysulmere, Udaipore, Baroda, Indore, Ujjain, Boondi and Kotah.
II.	Northern and Eastern Rajputana.	The Gurjara districts—Rohtak and Hissar, Jhind, Bhattinda, Umballa, Shaharaspore, Bulandshahr, Jeypore, Ulwar, Shekhawatti, Kishengarh, Bikanir, Kerowlee and Jhallawar.
III.	Hindustan	The whole of Oudh and the N. W. Provinces (except districts included under II.) and Gwalior, Bundelkhand, Rewa.
IV.	Bhojapore	Gorakhpore, Ballia, Benares, Azimgarh, Arrah, Patna.

See Map attached.

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IV.	Bhojepore	Gorakhpore, Ballia, Benares, Azinggarh, Arrah, Patna.

See Map attached.

Area I. would be allotted to the Bombay army.

Area II. would be allotted to the "Desi" Rajput regiments of the Bengal army, viz. the 13th (Shekhawati) Regiment, and the corps yet to be raised, which might conveniently be called the 41st (Hurriana) regiment. The regimental centre of this group should be at Agra, which though not in Rajputana is on its immediate frontier, and is the most conveniently situated cantonment in British territory for a regimental centre, Meerut the present centre, should be reserved entirely for Jats.

Area III. would be made over to the following corps :—

2nd B. I.... 4th B. I.... 16th B. I. centre, Jhansi.

7th B. I.... 8th B. I.... 11th B. I. „ Lucknow.

Area IV. would be allotted to the Hyderabad Contingent, which might recruit its Brahmins from Oudh, and its Rajputs from Bhojepore. The regiments belonging to Area III., could also recruit a few Bhojepurias if considered desirable.

It will be observed that the cantonments suggested as Rajput centres, are all favourably situated for recruiting, and possess special advantages with regard to railway communication. Agra besides being at the terminus of the Metre Gauge Rajputana-Malwa line, is in direct communication with the N. W. Frontier, by standard gauge rail-roads. Jhansi is an important junction, and is well placed with regard to the recruiting grounds of Bundelkhund, Gwalior, and the Gangetic Doab. Similarly Lucknow with equal railway facilities, taps the whole of Oudh.

For Areas I. and II, recruits should be sought from all clans represented therein, but the best would be obtained from the following :—

Name of Clan.	Where found.
Gahlot or Sissodia	Udaipore.
Rathor	Jodhpore and Bikanir.
Kachwaha.	Jeypore and Ulwar.
Jadon	Jeysulmere and Kerowlee.
Jhalla	Jhallawar.
Chauhan... ..	Boondi and Kotah.
Ponwar	} Throughout Rajputana.
Parihar	
Solanki	
Gaur	
Ponwar	} Hurriana territories, Hissar, Rohtak, Gurgaon, Delhi, Karnaul, Bulandshahr, Saharanpore, occasionally Mozzuffarnagar.
Tonwar	
Bhatti	
Jadus	

The Area III. recruiting should be conducted with the greatest care. Two principles should govern the selection of candidates.

I.—That men entertained should belong to sub-clans already represented in the regiment, to facilitate messing.

- 2.—That only clans of good repute should be enlisted. Men of low or doubtful clans should never be entertained; partly because they are nearly always of spurious origin, and largely aboriginal, and partly because the higher clans of pure descent decline to intermarry, and consequently to feed with them, moreover the general rule, holds good, that the higher the clan, the better the soldier.

The following list gives the best known clans of Oudh and the N. W. Provinces. Good men may be obtained occasionally, from clans of lower standing, but unless the men possess special qualifications to justify their enlistment, it is better to leave them alone:—

Ahiban.	Chandrbans.	Katiyar.
Amethiya.	Dhakre.	Kausik.
Bachal.	Dikhit.	Ponwar.
Bachgoti.	Gaur.	Parihar.
Baghel.	Gaharwar.	Pondir.
Bais.	Gahlot.	Raikhwar.
Bandelgoti.	Gautam.	Rathor.
Bar-guzar.	Jadon.	Rajkumar.
Bargala.	Jadubansi.	Sikarwar.
Bhadauriya.	Janghara.	Sirnet.
Bhale-sultan.	Janwar.	Sengar.
Bhatti.	Kachwaha.	Solanki.
Bisen.	Kalhans.	Sombansi.
Chauhan.	Kanhpuria.	Surajbans.
Chandel.	Katheriya.	Tonwar.

NOTES.—The Bais clan has numerous branches. The best known and most respected, is the Tilokchandi Sept.

The Gaur clan is divided into two main branches, the Chamar Gaur and the Brahman Gaur. Men of this clan repudiate any connection with either Chamars or Brahmans, but say that the wives of one of their princes took refuge with a Chamar and a Brahmin after a great defeat, and that the descendants of the son of the elder wife are accordingly called Chamar Gaurs, and rank highest, while those who claim their origin from the son of the second wife, are called Brahmin Gaurs, and rank below them.

The Chamars are a very mixed race. Certain classes of Chauhans rank among the highest Rajputs. They are found chiefly in the Mainpuri district. The Oudh Chauhans are not of pure descent, and take rather a low place in the marriage scale which is the true test estimation with which the Rajput sub-clan is held by other Kshatriyas.

For Area IV recruits may be taken from the following clans. The Lautamiyas are said to have been rather bad characters formerly, but the present generation are well behaved, and make good soldiers.

Gargbansi.	Kausik.*	Sikarwar.*
Gautam.*	Nikumbh.	Sirnet.
Hayobansi.	Kinwar.*	Ujjaini.
Kakan.	Lautamiya.	Palwar.
Karmwar.	Raghubansi.	

NOTE.—Clans marked with asterisks should not be enlisted without careful enquiries as there are Bhuinhar clans of the same name.

The Ujjains of Bhojepore are really Ponwars who emigrated from Ujjain in the 7th century. The Raja of Dumraon is the head of the clan. They are probably the purest bred of the Bhojepore Rajputs, and make good intelligent soldiers, being generally better educated than the majority of Oudh clans.

As regards the actual *modus operandi* of recruiting, immediate reforms seem desirable. Recruiting officers and commanding officers join in condemning the present system as bad, costly, and offering encouragement to slackness and dishonesty.

As things are at present, a non-commissioned officer is selected for recruiting duty in a certain district (generally his own) and receives from the district recruiting officer orders as to where and when he is to bring up his recruits for inspection. He is also provided by his regiment with an advance in cash, to pay for the subsistence of recruits until brought up for approval. His first step as a rule, is to proceed to his village, where he basks in homely sunshine until about a week before the date fixed for the recruiting officer's visit, when he begins to bestir himself, and with the assistance of his relatives, hastily collects perhaps five or six good men to a dozen weedy starvelings. He then brings up his batch for inspection with plausible stories about the prevalence of fever, and the difficulty of obtaining good men. The recruiting officer very properly rejects perhaps 75 per cent. of the lads enlisted, and returns the non-commissioned officer to duty with his regiment; but the latter has gained all he wanted, he has visited his home at government expense, and by giving false dates of enlistment for his recruits, is able to claim considerably more in subsistence allowance than the actual amount expended. After adjusting accounts on return to regimental headquarters, he finds there a surplus in hand, which he calmly proceeds to appropriate. Thus a large number of rejections is

The present recruiting system. a positive *source of profit* to the recruiter, and it is useless to urge that many non-commissioned officers would be incapable of perpetrating such frauds, because the temptation offered is too great, and profits to be made out of the subsistence allowance are regarded as legitimate perquisites. Government is thus steadily defrauded, and the recruits enlisted are not as good as they might be.

To stop this scandal the following steps should be taken :—

1.—Native officers, havildars, and naicks should be most carefully selected for recruiting duty, and should be warned that any complaint made against them by the recruiting officer would entail an unfavourable entry in the character roll, and forfeiture of claim to promotion. Similar misconduct on the part of a lance havildar or lance naick should also involve loss of lance rank.

2.—It should be impressed upon all with regard to recruits, that *quality* rather than *quantity* is required. No individual recruiter should be allowed to bring up more than 15 recruits for approval at a time. A limit of rejections of 1 in 5 should be allowed, but any rejec-

tions in excess of that number except on purely medical grounds, should be punished by making the recruiter pay for the subsistence of the rejected men out of his own pocket.

Suggestions for improvement of recruiting system.

3.—A bonus of one rupee should be given for every 5 recruits passed into the service.

4.—When recruit rolls are returned to regiments by recruiting officers, they should be accompanied by a statement signed by him, showing the amount due to the recruiter on account of subsistence allowance.

5.—When the required number of recruits have been obtained, and the recruiters are sent back to their regiments, the recruiting officer should prepare a statement showing the amount earned by each man in bonuses.

The recruiting officer's decision with regard to suggestions 4 and 5 should be final, and the statements referred to should be the vouchers required to support recruiting charges in regimental pay lists, and the data for adjustment of advances.

6.—Recruiting officers might with advantage return slack recruiters more frequently to their corps. They often hesitate to do so on account of the loss caused to the State by the issue of two railway warrants, one for the man sent back, and another for the man sent to replace him. But more firmness in this direction would be economy in the end. It must be remembered that though a recruiting officer hampered by bad assistants may find it necessary to accept recruits who only just come up to measurement, the eventual rejection of many of these men is none the less a practical certainty, for commanding officers being responsible for the appearance, physique, and efficiency of their regiments, are generally compelled to discharge such men, after giving them a few months trial. Rejection at this stage means a dead loss to the State of all the pay and grain compensation drawn since enlistment, besides railway expenses, and a large proportion of the Rs. 30 kit money allowed to each recruit. The economy aimed at in the first instance is thus "penny wise and pound foolish."

It is a regrettable fact that the pressure on the land caused by an ever-growing population, combined with extravagance over marriage ceremonies, and an increasing love of litigation, is gradually reducing the Rajputs of Oudh and N. W. Provinces to the position of servants to the bunnias and mahajans to whom they have mortgaged their ancestral lands. Poverty means an insufficient diet, and a consequent deterioration in physique. The increase of the population has caused much of the grazing land to be placed under tillage, and cow keeping is consequently less profitable. Milk to a Hindu, is practically a substitute for meat, thus the diminution of the milk supply means the withdrawal of the most nourishing item of his diet. We cannot hope to fill our ranks with the tall men of the pre-mutiny days, for if height is insisted on, it can only be obtained at a sacrifice of chest and limb power. In these days of flat trajectories, diminished stature is almost an advantage to the infantry soldier, and after all it is quite a question whether a well knit man of '5' 7", with a good chest, and powerful arms

and legs, is not more serviceable and hardy than the stately warrior of 5' 10" or 6', however, superior the latter may appear on a purely ceremonial parade. It is therefore a mistake to reject good men merely because they are short; when it comes to hard work, particularly in the hills, the short men invariably show greater staying power and endurance. As most of our fighting, whether on the N. W. or the N. E. Frontier, must necessarily take place in mountainous countries, this point should not be overlooked.

The energy of the Indian army has been so closely devoted to musketry for some time past, that athletics and gymnastics hardly obtain the attention they deserve. Constant changes in the Musketry Regulations and the requirements of the figure of merit system, leave officers and men but little leisure for manly sports. Thus wrestling and skill at arms, formerly so popular, have given way to pool-shooting; and the athletics which were formerly the pastime of the many, have become the study of a few specialists, whose skill is of a sufficiently high order to ensure profitable returns for their exertions at regimental sports and assaults at arms.

It is to be hoped that among the changes which the forthcoming division of the Punjab and Bengal armies will entail, encouragement will be given to the *esprit de corps* of our Rajput regiments by allowing them the title of their race. Now that the Hindustani infantry battalions are all organized on the "class" system, there is no reason why we should not speak of the 7th Rajputs or the 10th Jats in the same way as we talk of the 14th Sikhs or the 38th Dogras. Apart from sentimental reasons, it is obviously sound that the titles of regiments should also indicate their class constitution.

Rajput regiments should all have yellow facings. It is the fighting colour of the race, and appeals to their most martial traditions. Here again utilitarianism combines with sentiment for as men are now liable to be transferred to linked battalions, it would be a distinct advantage to have them dressed alike. If this idea was approved of, the principle might be further extended. Brahmin corps might have white facings, white being the emblem of their religious purity, and in the same way, suitable colours might be allotted to other races.

The localisation of regiments in the districts from which they enlist, has many advantages. It facilitates recruiting, and it is a boon to the men to be within easy distance of their homes, especially after a tour of service in a distant province like Burma or Assam. Against this must be set off the constant drain on the sepoy's purse, caused by the demands of needy relations. Every pay day the latter swoop down upon their kinsmen and take off nearly all their earnings. The result is, that unless very carefully watched, the men underfed, and try to provide for little luxuries like *pan*, opium and tobacco at the expense of their stomachs. These objections hardly exist when troops are quartered at a distance from their homes, for then their generosity can only be

meted out in money orders, which are not sent off without considerable thought and discussion. The increased cost of many articles of half mounting, due to a low exchange, means more deductions from pay ; all questions therefore affecting the sepoy's pocket, need very careful watching.

But quite apart from the reasons already given, it is not good policy for troops to be quartered too long among their own people.

Troops after all are the instruments by which a government enforces on the civil population respect and obedience to its orders. If the interests of troops and people are allowed to become too closely knit together, and mutual grievances are permitted to spring up by long association in the same districts, the effectiveness of the military aid is likely to be gravely compromised, and the civil authorities may find on occasions that they are looking for support from a broken reed.

The Mutiny of 1857 taught us the danger of allowing military power to pass into the hands of any particular class. Since then, an equilibrium, has been secured by enlisting from many races, while denying to any one race a preponderating influence over the others. But this principle, sound as it is, hardly seems sufficient. With a large mercenary army raised for the protection of a vast empire composed of various antagonistic races and creeds, it would seem sounder policy to distribute our troops in such a manner as to ensure there being little in common between the civil populations, and the troops of their local garrisons. Thus Hindustani Hindus would be well placed in the Mahomedan districts of the Punjab while Hindustani Mussulmans would be equally well posted at Umritsar, Ludhiana, and other Sikh centres. In the same way some of the Punjab regiments would gladly take a tour of duty in the pleasant cantonments of Oudh and the N. W. Provinces, where their presence would have an excellent effect.

It is not suggested that troops should be excluded from service in their own provinces, but that it should be restricted ; in other words let one of a group of linked battalions be always stationed at the regimental centre, while the remainder are employed elsewhere.

In conclusion it must be remembered that the *raison d'être* of the Indian army has completely changed in the last few years. Formerly its chief object was the protection of the British Dominions from attacks by Native States ; now its duty is to secure the integrity of our Indian empire from invasion by two of the great Military Powers of Europe, one on the N. W. Frontier, and the other from the direction of Indo-China. The latter presents no serious danger so far, for so long as we retain our maritime supremacy, attacks from this direction should be easily localised, and are not likely to prove much more than troublesome diversions made to distract attention from more serious operations directed against our northern border. But in any case a campaign against two such powerful foes would strain our military resources to the utmost, and for various reasons we must rely for superiority rather on our efficiency than on our numbers. Hindustani corps can only be preserved from the dry-rot of disuse by frequent employment on active service. Localised in the peaceful cantonments of the N. W. Provinces,

As a mule will carry 2 maunds, this leaves 20 seers to spare. This would cover the weight of 4 galvanised iron buckets which at 2 seers each, would come to 8 seers. These buckets could be fastened on to the mule saddle, between the two loads. The use of cumbrous Hindustani *do/s* should be absolutely prohibited.

Besides the above sectional cooking pots, each man would carry in his haversack the following :—

						<i>Seers.</i>	<i>Chittks.</i>
1 Lotah	...	...	Weight	...	...	1	0
1 Katorah (Ghee cup)	...	..	..	...	...	0	2
1 Thali (Plate)	...	...	..	...	...	0	14

Total weight of utensils carried by the sepoy ... 2 0

A regiment equipped in the manner indicated, would require the following transport for water and cooking pots :—

Per Regiment.

1 Mule per company for cooking pots = 8 mules.
 1 Mule per company for water tins = 8 „
 Add one mule carrying a water tin on one side,
 and a half company set of utensils on the other, } = 1 „
 for the use of the hospital.

Grand total 7 camels or 17 mules,

The total cost of providing a half-company set as shown in the accompanying diagram, would be Rs. 16, manufactured at Cawnpore. Thus the equipment of a regiment would come to Rs. 272 (hospital set included). If aluminium were used instead of brass and copper, the equipment would weigh less, but cost more. The cost of water tins is not included as their value is recoverable from government when a corps is ordered on service.

SWORDSMANSHIP.

INTRODUCTION.

Colonel King-Harman has kindly procured the permission of the authors to the publication of the following papers on "Swordsmanship" in the Journal of the U. S. Institution of India.

Colonel King-Harman notes in forwarding these papers that there appears to be quite a revival of fencing in London and that it is spreading throughout England.

The Council consider that the authors of these papers are to be heartily congratulated on the successful results of their labours and hope that it will not be long before a like revival takes place in India.

By E. STENSON-COOKE, London Rifle Brigade.

Read at Toynbee Hall, January 22nd 1895.

When, in October last, Captain Hutton was invited to bring a party of our regiment and give an exhibition of Swordsmanship at Toynbee Hall, which was prefaced with a short address by myself, it was found that this lecture room was hardly large enough to admit at one time the members and friends of the Institute and the Cadets of "The Queens". It was therefore arranged for us to give a second and similar exhibition for the especial benefit of our comrades, and we are here this evening in answer to that invitation.

On the last occasion I was bound to generalise my remarks, and touch upon various epochs in the history of Fencing as a recreation, and as a means of personal safety; this was because we had practically no hope of infusing the faintest active interest into our audience, and we certainly did not leave Toynbee Hall in the expectation of turning its beautiful drawing room into a Fencing School.

Now, however, that we are before the real objects of Captain Hutton's efforts, viz: the English boy, I will ask your attention for a few minutes while I explain one or two details in connection with Fencing. I am bound to stick to one portion of my text; and that is, the English boy's objection to Fencing. You will not mind my saying that this objection arises purely from ignorance of the pastime, because out of the large number of our Cadets who have learnt Fencing since Captain Hutton first came to our School of Arms, there are but a very few who have tired of it, and the majority are even more enthusiastic than when they commenced.

Like many other amusements, the Art of Swordsmanship is misunderstood in this country. If you ask anybody casually what Fencing

consists of, they will invariably reply, "Oh, you have jacket, a leather one—and a wire arrangement over your face—and a foil, and you stand up and prod about at the other fellow, and he prods back, and the one who prods the more—wins, and that's about all. Well! that is not all; there is something more than mere prodding. The Science of Arms involves the use of every weapon of offence or defence from foil to bayonet, from dagger to battle-axe, and is so perfect in its evolution that one weapon leads easily and naturally on to another, commencing with the foil, which is the A. B. C., I might say, the five finger exercise of Fencing. Still keeping to my text, the British objection to Swordsmanship is based, I think, upon the supposition that it is not dangerous enough to be exciting. All the world knows and wonders at the love of every game wherein lies discomfort, hardship and danger, displayed by young England; black eyes at boxing, bruised shins at football, smashed fingers at cricket, are the especial delight of the English boy, and it is this characteristic of pluck and energy which helps to keep the British Empire at the head of the world.

All the swordsmen I know are staunch believers in these sports, but I must correct the general impression and maintain that Swordsmanship answers all the aforesaid requirements and is in every way worthy the dignity of an English pastime. There is really no need for me to say all this, because I can rely on your fully understanding the matter after my friends have given their exhibition.

One or two remarks with respect to the bayonet will perhaps be of use to any of you who intend one day to join Her Majesty's Army. Like other weapons, the bayonet needs a certain amount of earnest attention before it is much use in the hands of a soldier, and seeing that the British Army is nearly always engaged in some little skirmish with savages where hand fighting is more the rule than the exception, the authorities would do well to introduce a more practical method of bayonet Fencing than the useless exercise at present taught in foot regiments. Exercises, however well performed, have proved to be of little use when the actual fight comes; in a combat a man wants nerve and presence of mind, and this can only be obtained by making him used to standing up in mimic conflict with another man. Otherwise he would be like the individual in one of Rider Haggard's books who made all sorts of rules what to do in case of fire, and when the fire did occur, threw his mother-in-law out of the window and carried a feather bed downstairs.

Let us endeavour to look at the matter from a plain and sensible point of view. The Magazine Rifle is the best of weapons for use in action during a large part of the attack, but at the crucial point when the position is reached, the word is "Cold Steel", and plenty of it; and then, with officer and man alike, true courage is often greatly discounted by ignorance of even the first principles of Fencing.

Perhaps Captain Hutton, who has been mainly instrumental in commenting upon the apathy of the authorities with regard to this matter, will forgive my borrowing a little anecdote contained in his lecture at Manchester in December 1893. The story is somewhat sad

and the names are therefore suppressed. It is an episode of the Soudanese war, about a young subaltern, quite a lad, who had only recently joined his regiment when it was ordered to the seat of war. They were engaged one day in a skirmish with the enemy, when an Arab, armed with one of those heavy swords they use, rushed at him. He was a plucky boy, as most English boys are, and he stood his ground like a man, but unfortunately for him, he had never been taught anything in the way of fencing, he had no idea whatever how to manage his sword, and he was perfectly helpless. He tried to put up some feeble sort of guard, such as we are expected to acquire in that rather quaint performance, the Infantry Sword Exercise, but this made no difference to the Arab, who with one sweep of his big sword cut the unfortunate young fellow nearly in two. A good many sentimental people no doubt sympathized with the poor boy's parents; let it be understood that they deserved very little sympathy, because, had they for a moment recognized the necessity of adding a little sound instruction in Swordsmanship to the other portions of his education, the catastrophe might have been averted.

Speaking, then, to those who think of choosing the Army for a career, whether you carry Rifle or Sword (and both are equally honorable) I urge you to devote a part of your spare time, only one or two hours a week, to the study of Fencing, and so join your regiments with some practical knowledge, however slight, of your weapons, knowledge to which you may one day owe your life. Remember that as I said before, the foil is the A. B. C., of Fencing, it is no use for you to learn a few guards and points with a single-stick or bayonet, and comfort yourselves with the idea that you can fence, any more than you can do Decimal Fractions before you have learnt simple addition. You must walk before you can run, and whatever drudgery there may be in the lessons, (I never found any), is confined to this little weapon, after which, the others are comparatively easy.

The younger a pupil is, the better, because a boy is not only more apt, but he has less to think about, and his frame is more easily adapted to the positions than that of a fully grown man. The ages of my friends range from fourteen years upwards, and one or two have only been a few months under instruction. This, I think, speaks volumes.

I ask you then to give it a trial. As a recreation the Science of Arms is without equal, and if our exhibition and my remarks do in any way bear fruit with you, if not to obtain recruits in the cause, at least to gain a just appreciation of the merits of Fencing, Captain Hutton, our party, and myself, are amply rewarded.

January, 1895.

The reading of the paper was followed by an exhibition of Swordsmanship of which the following was the programme :—

PROGRAMME.

In arranging our events we do not adhere strictly to chronological order, our object being to make our entertainment as varied as possible.

1. FOIL PLAY, (Modern).

The use of the foil is the exercise most largely practised in all serious fencing schools, and justly so: its science is the last and most perfect development of the art of fencing throughout four consecutive centuries, and it is an indisputable fact that the man who has acquired proficiency in wielding it can without difficulty learn in a very short time the use of any other of the many weapons which may be generally classed under the name of Cold Steel. The foil is the school weapon with which is taught the use of the deadly French sword.

Cadet Drill Instructor E. D. JOHNSON.

Private E. DICKIE.

2. RAPIER AND CLOAK, (XVI. Century).

We must suppose ourselves to be out of doors, when we suddenly chance upon an "unfriend"; words pass, tempers lose themselves, and out flash very speedily the long, unwieldy swords. We feel for the protecting dagger, but we have forgotten it at home. We have, however, our cloak; we seize it by the collar with the left hand, turn it rapidly twice round the left arm, allowing what remains to hang outside. We are now ready for the fray, and we parry the enemy's attacks with the pendant folds, and if the cloak should work loose from the arm, we throw it at the enemy in such a manner as to envelope his entire person, or at the least his sword-arm and blade; upon which we finish him promptly, lest a like fate should overtake us.

Lieut. E. STENSON-COOKE. Lieut. F. H. WHITROW.

3. BROAD SWORD AND BUCKLER, (XVI. Century).

This very interesting game is in reality much older than the century with which we are dealing; but at the beginning of this era it was in full vogue, and was regularly taught by all the leading masters. The offensive arm used was a short double-edged sword, either edge of which was employed almost indiscriminately, and a cut with the false (or back) edge at the back of the advanced leg, known as the "*Coup de Jarnac*," is continually recommended by Marozzo as being one of the most effective blows that can be given. The sword was held in the right hand with the forefinger over the quillon, and the buckler was grasped in the left fist, and never allowed to rest on the arm.

Private E. G. STORIE. Cadet Sergt. GAYDON.

4. CASE OF RAPIERS (XVI. Century).

Such was the English name given to the two rather short swords which were kept in one and the same scabbard, and formed a perfect pair, used one in each hand. They could hardly ever have been worn as an article of dress, and were therefore regarded distinctly as duelling weapons. They were evidently not much practised, even in their own time, and for the very reason that they were so little understood. Marozzo advises his pupils to study their use as being excellent weapons to force upon an opponent in case of a duel in the lists.

Gentleman Cadet R. DONAJOWSKI, *R. M. C. Sandhurst*.

Cadet Drill Instructor E. D. JOHNSON

5. SABRES (Modern).

The best English fencers with the Sabre or Broad-sword are now distinctly taking up a judicious combination of the old English Broad-sword play of the "Gladiators" of the 17th and 18th centuries, and of the fence of the feather-weight duelling Sabre (non military arm) of the modern Italian School.

Lieut. E. STENSON-COOKE. Private W. P. GATE.

6. FRENCH SWORDS (Modern).

The practice of this weapon, used for point only, is an exact representation of the French sword duel of to-day, and the weapons used are in very way the same as the duelling sword, save that their points are blunted instead of being sharp.

Cadet Drill Instructor E. D. JOHNSON.

Private E. G. STORIE.

7. CASE OF RAPIERS.

Gentleman Cadet R. DONAJOWSKI, *R. M. C. Sandhurst.*

BROAD SWORD AND BUCKLER.

Cadet Sergt. GAYDON.

8. RAPIER AND DAGGER (XVI. Century).

This method of fencing was in vogue in Western Europe during the greater part of the sixteenth century, and part of the seventeenth. It was the immediate successor of the broad-sword and buckler, which it very speedily ousted, partly from the rapier being used mainly for thrusting, and being, therefore, much more deadly, and partly from the fact that its large, gracefully formed hilt, lent itself readily to ornamentation in chased and inlaid work. It was so long and unwieldy as to necessitate the employment of an auxiliary arm carried in the left hand for purposes of defence. This was usually the dagger, then an article of fashionable attire; but sometimes the cloak, or even a great buff gauntlet, was substituted for it.

Lieut. E. STENSON-COOKE. Lieut. F. H. WHITLOW.

9. DAGGER AND CLOAK (XVI. Century).

In the Elizabethan period, the dagger, or a sheath knife of some kind, was openly worn by everyone, and in those turbulent times came out of its scabbard very easily, so that the knowledge of its fighting powers was very needful. This exercise, which has been carefully studied from the pages of Marozzo, requires extreme agility and watchfulness; the dagger is held upwards, with the thumb resting on the flat of the blade to ensure a firm grip, and the manipulation of the cloak is much the same as when it is employed against the rapier.

Private E. DICKIE. Cadet S. BERINGER.

10. THE TWO-HAND SWORD.

The two-hander was the favourite weapon of King Henry VIII., who proposed its use at the Field of the Cloth of Gold, but Francis I. declined it on the plea that there were no gauntlets then made strong enough to protect the hands against accidental damage from so ponder-

ous an arm. The swords used in this bout have been copied from a genuine two-hand practice sword recently in the possession of the Baron de Cosson; and the fencing has been carefully studied from the works of Achille Marozzo, Giacomo di Grassi, and others

Lieut. F. H. WHITLOW. Private W. P. GATE.

"SWORDSMANSHIP."

A Lecture delivered at Merchant Taylors School in London, on Saturday, the 3rd November 1894.

By Lieutenant F. H. WHITLOW of the London Rifle Brigade
Volunteer Corps.

Swordsmanship, should ever be one of the most interesting subjects which attach themselves to every day life; and is a most useful accomplishment, being still more a necessity to those, to whom the future means constant association with military weapons.

Fencing, a highly popular sport in former times, seems to have gradually so decreased in popularity that in England, at the present time fencers worthy of the name are not so very easy to meet with.

When the sword was not only part of a gentleman's dress, but its use also part of his education, it was of course necessary to thoroughly understand the practise, as on the slightest provocation swords were whipped out and the matter speedily settled. Therefore a man who valued his life and wished to be free from insult was bound to acquire some knowledge of his weapon.

The importance of a knowledge of fence manifests itself principally to the soldier, although it can also be deemed important to a business man whose calling in life leading him through quieter scenes and experiences, his knowledge of the subject will not be called upon for means of life preservation, but rather for the exercise, and fencing will simply be to him a form of recreation and amusement; but with the soldier it is a different matter; the study of arms is part of his profession and should be treated as such, and not slurred over as it is too apt to be; if as little attention as is paid to fencing were also paid to the subjects contained in the "Red Book," we may be quite certain that drill would not be taught in so satisfactory a manner as at present.

So little interest is evinced in this art by officers, that there is hardly a regiment even now in which one could count half a dozen officers who have any practical knowledge of Swordplay. It must not be thought from this, that no steps are taken by the authorities to teach them how to use their weapons, as each Subaltern on joining his regiment is placed in the tender mercies of an instructor, who teaches him, together with several others who may have joined together, the somewhat incomprehensible attitudes and movements, combined under the heading of the Infantry Sword Exercise consisting of various wonderful cuts and still more marvelous Guards; the art of joining these

together in the shape of Loose Play is left entirely to the pupil, who probably, has had enough in these few days of this monotonous squad drill to last him some time to come, the positions being so tiring and awkward that he is only too glad that they are finished for a time, and thus the chance of making himself a Swordsman is postponed until he feels disposed to start again.

It seems incredible that such a state of indifference should exist in an army on which we all pride ourselves, but we know that it does. The facts are too well known to be either disputed or disguised. Ask any well informed Colonel, how many of his officers fence : you will be astonished at his answer:

There are several regiments which possess a good school of arms with a corresponding increase of proficient but these schools are very few and far between.

Now too much blame must not be put upon the officers themselves because the fault is not entirely theirs, they have no, or very little, opportunity for practise, neither have they many facilities for obtaining instruction; there is not even a book to be had containing a regulation system for the guidance of instructors. The attention paid by the authorities is apparently very slight, they seem to imagine that by making each officer undergo a few days sword exercise at the commencement of his regimental life he will blossom out into a master of the art and that all further need of instruction is quite unnecessary.

It seems so grossly unfair to give a man a weapon and expect him to save his life with it, when he has only the faintest possible notion of its use. Comparisons are usually considered odious, but a very good simile to the case in question, however, would be a boy trying to speak French when he only knew the alphabet. With the latter it would be impossible and ridiculous! with the former, it is evidently thought quite possible, and if by chance the victim of this indifference should lose his life, would any one be blamed? Oh dear no! people would say "Poor fellow! how sad!" &c. and there it would end, not dreaming for a minute that he lost his life simply through his incapacity, and, that had he possessed a knowledge of his sword, he might have returned home safe and sound to the joy of his family.

Matters have become so serious, the number of Swordsmen so small, that several energetic well known fencers are striving and doing their utmost to improve the condition of fencing, such as it is, in the army at present. At the head of these is Captain Alfred Hutton late K. D. G's. who devotes a very great deal of his time to the cause, his idea being to thoroughly train boys, those intended for the army more particularly, in the art of fencing; their minds are more receptive, and their bodies more pliable than those of a person of mature years,

A smart boy of 14 or 15 can learn enough in a very short time to enable him to practise "loose play;" after the body is set it takes a much longer time to learn, the positions are more fatiguing, and the lessons irksome, a youngster does not mind this as his frame stands more twisting and pulling about without the usual tomorrow results. Although such a very keen fencer himself, Captain Hutton did not take much active in-

terest in the reform of the style of fence practised in this country until a few years ago.

It is about four years ago since he first conceived the idea of forming a class for Cadets in our regimental school of arms, taking such interest in the work that after a few months he turned out several fairly respectable fencers, all of whom were under 17, and directly a boy was sufficiently advanced to practise "loose play" he was told off to instruct some other beginner, the class meanwhile growing gradually larger. As soon as the class was deemed to have made the necessary progress he introduced the aid of various weapons of historical interest, representing the style of fence in the middle ages, which he rightly conjectured would greatly assist in keeping up the interest during the trying period of the early lessons and induce others to join by the novelty and excitement of the bouts.

No one outside the class knows how hard and perseveringly Captain Hutton worked to set going this scheme and the many times he returned to town from distances purposely to give his valuable aid and assistance.

At last, having a certain number sufficiently initiated into the art he organized various entertainments to take place at Schools and Cadet Corps, illustrating by means of the various weapons, which we shall presently show you, styles of fencing in vogue from the early part of the 16th Century to the present day, trying through these to arouse the particular School or Cadet Corps into a state of active enthusiasm which would culminate in the formation of a class.

The first Public School which we visited was Bradfield College, about 12 months ago. At the time of our visit they had some two hundred boys, out of whom there might have been a dozen, certainly not more who fenced at all and that only in a half hearted sort of way; now this school has a large army class, who, if all goes well, will eventually become soldiers; would you believe it, hardly one of these was thinking of learning to fence! however, they were so interested with our performance and impressed with the importance of learning, that they can now turn out from their class of fifty some of the smartest fencers for their age; and in their turn contemplate going on with the work and giving shows to other schools in the vicinity.

This is an instance of what Captain Hutton hopes to do with all schools so as to bring fencing within the reach of all, especially those who most need it as a profession. I say hopes, but unless he receives the help and encouragement from the masters themselves his efforts will be futile. It is to the Masters and Parents that we look for help to provide the necessary arrangements for their boys to receive a good sound instruction in fencing.

One cannot fail to perceive the inestimable advantages which would surely accrue from such a practical knowledge of self defence, and if those Parents, who destine their sons for a military career, have any regard for them, they will do well to think about their fencing education, neglect may be fatal!

Having had such good results from Bradfield we were next induced to appear at Haileybury. Here, as at Bradfield we were again rewarded

with results, though not quite so rapid or effective as at the former school; probably by next year after a little more time for consideration we shall hear of further progress.

Outside the schools we have given several shows at different places, having been invited last year by the Volunteer Officers Association at Manchester to try and do something to revive the interest amongst the different Volunteer regiments.

It is very hard to instil energy into and interest the minds of grown up persons who have grown too old to take part in this exercise, and we do not expect it, but we do expect it from persons sufficiently young to take an active and personal interest in the subject; therefore to obtain Swordsmen for the Army it is most important to urge upon the schools, the need of early instruction.

One result from the Manchester show was an invitation from the "Cercle d'escrime" of Brussels, to go over to take part in a grand fête which was being held in honour of the recent Belgian Royal Wedding. The show consisted of various actual historical fights in costume of the period, the dates varying from the 7th century to the present day; the fighting in six out of the nine tableaux was performed by our party, three of them being under nineteen.

I have thought fit to introduce these different facts and reports of our doings, to show what can be done by boys of your own age, hoping that it may encourage you all to take up fencing, so that you can help to increase the number of English Swordsmen. As we all expect great things from you, we do not wish to think our attempts to infuse a fencing spirit into you will meet with failure, but on the contrary will make you commence at once. The best and easiest way to do so is to join our Cadet Corps, to which several members of your school already belong and where you will be heartily welcomed, for beyond the actual advantages of the School of arms where you would be under Captain Hutton's immediate guidance, there are not only the usual benefits derived from the drill but numerous prizes for shooting.

In conclusion, I can only ask those parents who are here to-day to give their sons this opportunity, one which I can safely assure them they will never regret.

SWORD AND PISTOL.

By Colonel M. J. KING-HARMAN.

That distinguished officer the late General Sir George Chesney once gave this piece of advice to the students at Cooper's Hill College, that each one of them on joining the service should adopt some hobby apart from his profession as a relaxation, and a very valuable piece of advice it is too. Many years ago I adopted the subject of this paper as my particular hobby, and I have been riding it pretty hard ever since ; and not altogether without signs of success.

In India, the sword and pistol are the only authorised lethal weapons of the officer. I am not quite sure that in England the pistol has been yet officially recognised as forming part of an officer's equipment, but if not I hope that it will be soon.

In order to be an efficient combatant, it is necessary that an officer should be a complete master of the weapons with which he is armed. That is my first point.

Examinations in various subjects which appear to be increasing in number steadily, are considered to be necessary for the production of good officers, but as yet no examination in swordsmanship or pistol shooting has been considered necessary ; the reason for this I cannot guess, but I am in great hopes that in course of time one will be instituted for all young officers before they are gazetted as lieutenants in any branch of the service.

We insist on a certain standard of excellence in the use of arms being attained by all private soldiers, but we attach no importance to the fighting capabilities of the officers who have to lead those soldiers. There seems to me to be something unreasonable in that.

Every weapon with which an officer or a soldier is armed, should be the very best of its kind that can be produced.

Starting from those two as my base, I will now endeavour to place before the readers of this Journal the results of my experiences during the past three years, and the conclusions that I have drawn from them.

The sword being in my opinion the most important of the two weapons, I will commence with it. If I was asked my reasons for that preference I should feel inclined to answer in the words of that famous old Irish song,

“ The pistol flashed,
“ His head I smashed
“ Och ! Shilelagh never missed fire,

any pistol may happen to misfire and if that occurs when your adversary is five yards off, you will be in an awkward position, unless you have a trusty sword in your right hand, and know how to use it.

Few people have any idea of the number of different patterns of swords that have been introduced into the service at various times, and we shall not gain much by going into that question at any length now ;

The sealed pattern Staff Sergeant's sword resisted a vertical pressure of 33 lbs. before deviating from a straight line. The new Naval Cutlass resisted not less than 70 lbs. ; and the Household Cavalry sword (pattern 1888) resisted 28 lbs. No reason was given, or can be given for such differences. But what I want to know is why a sword which is required to be thrust through the body of a heavily clothed man should be pliable. If it bends, it will not go through ; and if it does not penetrate, the force of impact is too small to cause injury to the body thrust at. We do not make our lances, or bayonets pliable ; there certainly is an official bending test for the triangular bayonet, but it is resistance to a weight of 440 lbs. which almost amounts to rigidity.

An extremely interesting and valuable report on the best tests to be applied to, and the best material to be used in making swords was submitted to the War Office by Sir F. Bramwell, and Mr. B. Baker, in August 1889, but it is too long and too full of technicalities to reproduce here.

My own opinion is that we shall never arrive at finality in this matter until we adopt a rigid blade ; the proper shape of the blade will very soon be found directly the question of cut or thrust is decided, and the length and shape of handle which is of equal if not greater importance, will follow on that.

The more rigid a blade is, the more effective must it be for thrusting ; and rigidity does not in any way detract from cutting power, witness the old Damascus scimitars or a good Indian tulwar. Colonel G. M. Fox, a noted swordsman, and Inspector of Gymnasia in Great Britain is strongly in favour of a straight pointing sword ; and he makes no secret of his conviction that the present Cavalry sword is far too heavy, even for our Heavy Dragoons. The sword controls the man, instead of the man controlling the sword. Any of you can prove that yourselves by half an hours actual trial, and it was also clearly demonstrated by the Colonel of a famous Cavalry Regiment in his lecture at the R. U. S. I. on Cavalry equipment. This opinion was arrived at long ago by those eminently practical gentlemen Messrs. Latham, and Musgrave of the Wilkinson Sword Company who exhibit in their show-room a sword of their own design and make which I think embodies Colonel Fox's views, but which is of a peculiar form, and very light, which they strongly recommend for cavalry. It is strong enough to resist any number of blows or to parry a bayonet thrust ; it is rigid enough to be thrust through any thing ; and it has no edge, therefore there is no inducement for a man to attempt to cut or beat with it. Such a sword only requires to be held straight and thrust forward with as much force as possible ; therefore our officers and men could be easily taught the use of it ; and a charge by a Regiment so armed would possibly prove more effective than a charge of Lancers. I believe that no one doubts the superiority of the point of Western nations over the Eastern cut.

At one time I advocated the use of *either* a purely cutting sword or a purely thrusting one, but I am now convinced that the former would never answer in the hands of English troopers ; if, however, the latter

but as illustrating the ideas that have prevailed, it may interest some of you to know that prior to November 1888, there were in the service five separate patterns for dismounted Staff Sergeants. It must be remembered that the Infantry Staff Sergeant's sword was similar in construction to the swords worn by officers; but it was not the only weapon which Government supplied to those men: they were also armed with a pistol each, and so had the advantage over the officers, who up to 1888 were not I think obliged to have pistols as part of their equipment.

Possibly there are many who have never heard how it came about that those five patterns were reduced to one pattern blade and two patterns of hilts, one gilt, and one steel, and I did not know the full particulars myself until within the last three years. It happened in this way. When the old 65th York and Lancaster Regiment returned to England from the Soudan, the officer who had to report on the arms, reported the swords of the Staff Sergeants to be useless as weapons of offence and of very little use for defensive purposes, and added in all seriousness some remarkable words, to the effect that as the Staff Sergeants were armed with pistols, possibly the uselessness of their swords was not of much consequence. It was probable that the stinging, though unintended sarcasm contained in the last remark that brought matters to a head, as it was not long before the pattern was changed, and a better class of sword was issued. That is to say it was in less than five years.

It must be remembered that at that time there was considerable, but only temporary popular indignation over the extremely inconvenient revelations concerning twisted bayonets, and broken cavalry swords in the Soudan and Egypt.

The years 1887-89 were busy ones for all interested in swords, for during those years, in addition to the Staff Sergeant's swords, very important changes were made in the cutlasses and sword bayonet cutlasses issued to the Royal Navy; and attempts were also made to provide a really good sword for the Household Cavalry. It was during the discussion which took place regarding the latter, that one of the high responsible officials made great efforts to settle the important question whether the sword should be a cutting or a thrusting one. He demonstrated clearly that they were two absolutely different weapons, and that conditions of balance, weight, handle and quality of material rendered it impossible for a sword to be made equally good for both purposes. It is a great pity that our national love for compromises leads us to ignore that most important point.

It may appear strange, but it is nevertheless true that those are identical opinions held and expressed by professional sword-makers. They say that if Government will once decide which description of sword is to be used, they will find no difficulty in obtaining the best possible article from the trade in England; but that none of them will insure the success of a hybrid.

Strange to say during all that time no notice was taken of the Infantry Officer's sword. Most of the discussions and experiments turned on the bending tests of the blades; and the result was curious.

The sealed pattern Staff Sergeant's sword resisted a vertical pressure of 33 lbs. before deviating from a straight line. The new Naval Cutlass resisted not less than 70 lbs. ; and the Household Cavalry sword (pattern 1888) resisted 28 lbs. No reason was given, or can be given for such differences. But what I want to know is why a sword which is required to be thrust through the body of a heavily clothed man should be pliable. If it bends, it will not go through ; and if it does not penetrate, the force of impact is too small to cause injury to the body thrust at. We do not make our lances, or bayonets pliable ; there certainly is an official bending test for the triangular bayonet, but it is resistance to a weight of 440 lbs. which almost amounts to rigidity.

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At one time I advocated the use of *either* a purely cutting sword or a purely thrusting one, but I am now convinced that the former would never answer in the hands of English troopers ; if, however, the latter

form was adopted what would become of our beautiful but perfectly useless Sword Exercise, and Pursuing Practice? As illustrating the utter inability of the average trooper to use the edge of his regulation sword, I may mention a curious incident that occurred at the Regent's Park barracks in the year 1885 and which only came to my notice, at a comparatively recent date. When six trained mounted men of the Life Guards were had out before a special committee to shew how deeply they could cut with sharpened regulation swords into the body of a dead horse; but not one of them could cut with the edge leading, and all of them hit with more or less of the flat side of the sword.

There are some distinguished men who are still in favour of having an edge to pointing swords, and their argument is that in a close *mêlée* where opposing forces are mixed up closely together, the men may be so-jammed up as to be unable to use the point effectively and that the cut will then be of the greatest use; I have never been in such a position myself, but my idea is that if a man is so tight wedged in by others as to be unable to drive his point with one motion into something—man or horse in front of him or to one side, he certainly will be equally unable to raise his hand sufficiently to deliver a blow which requires two separate movements and which also requires a certain amount of space in order to make the blow tell; and further I am sure that the chances are all against that blow being with the true edge. With a short curved weapon in the hands of an expert, it might be just possible, but not otherwise.

I attach no importance to the argument that if a man thrusts his sword into a body, he will have great difficulty in drawing it out again, and that meanwhile he will be defenceless; that may be or it may not be, and any how the man has done for somebody; but I do attach importance to the fact that an uplifted arm means an undefended body, and that a blow with the side of a sword generally means a broken weapon.

The new sword for infantry officers which was introduced about three years ago is an improvement on its predecessors, but it is still a compromise. It was intended to be chiefly a thrusting sword, but it is not sufficiently rigid to be effective as such, and the handle is neither long enough nor properly shaped for that purpose; added to which the blade is edged for the purpose of being used for cutting, but it is too narrow and light to carry through an effective cut; therefore it is neither one thing nor the other, although probably intended to be both. With a properly shaped handle it would make a good duelling sword, but it is not an efficient fighting weapon for active service.

It will be welcome news to many to hear that at last, the pretty gilt guard has been officially condemned, and a steel one has been sanctioned instead; but no other change appears to be contemplated just at present, which is a great pity; the more so because the sword cutlers themselves are very open in pointing out the defects and in demonstrating how they can be remedied; and moreover the requisite changes will entail no expense on Government, because the officers pay for their own swords.

I hope some day to see the large elaborate guard done away with, because it cramps the free action of the hand and wrist, and is most inconvenient when the sword is worn in a service belt, or even when it is hooked up in peace time. I own that it looks very well, and I know that for that reason alone few would like to give it up, but a plain cross-hilt would look nearly as well, and would be far more comfortable. As for being a defence for the hand, well, I think that is only an excuse for a bad swordsman; but for a man who can use his sword ever so little, I am sure that his best defence lies in his blade, and you may be sure that if a man can cut your hand, he can with equal ease cut your head, which will answer his purpose much better. I will not waste time and space in attempting to describe the number of different kinds of swords that I examined when at home last winter, but if any one has a taste in that direction, I should advise him to pay a visit to the Armoury in the Tower of London, which contains an incomplete though a fairly good collection of duelling and fighting swords; and a careful examination of them will surely set any man thinking how or why it is that we as a nation appear to be so ignorant about swords.

Having given so much space to the sword I must now pass on to the use of it. I should like to know how many officers in India have learnt the use of the sword practically during the past three years? There cannot be many, and I fear that there are very few. There appear to be two reasons for that; one is the lamentable want of instructors, and the other is the want of inclination on the part of the officers. This may raise a smile but it is a fact. At how many stations in India or elsewhere are there voluntary fencing classes, and how many officers attend those classes? The lack of instructors can only be got over by sending men home to be trained; but meanwhile a great deal more can easily be learnt from the few who are in this country than is now done; and very much can be accomplished by self instruction. I know of one distinguished regiment, the officers of which took the matter into their own hands a few years ago, and deliberately taught themselves fencing and also revolver shooting, so it is plain that where there is a will there is always a way. Of course if men are individually so apathetic that they will not voluntarily learn the use of their weapons, the only other way of teaching them is by compulsion; and I hope that even that unpopular course will be adopted rather than that the mass of our officers should be left much longer in such ignorance as they are at present. Every officer should take a pride in his knowledge of his own weapons, and such knowledge will give him complete self confidence wherever he goes.

I am well aware what the duties of an officer are towards his men, both in peace and in war; so I need not be reminded of them: and I am very far from being an advocate of an officer neglecting those duties in an endeavour to secure fame through a series of independant personal encounters; yet that is one of the sins that is laid at my door.

I am also thoroughly sick of the oft repeated, but groundless statement that now-a-days officers have so much to do as not to have time to devote to a short practice occasionally in fencing or shooting.

It would of course be a disgrace to our army if such was true, but fortunately it is not so. We have already in the Regular and Auxilliary Forces of the Empire, some of the finest swordsmen in the world, and there appears to be no sufficient reason why every officer should not be an expert swordsman.

I notice that those who object most strongly to officers being combatants belong entirely to the party that contains in its ranks many who will doubtless soon be urging the necessity for having a final and searching examination for General Officers previous to death : they themselves being, as usual, alone excepted.

Be it known unto them that expertness in Swordsmanship is not incompatible with a complete knowledge of tactics ; and that in all probability the best tactician will prove to be the ablest swordsman.

It may seem strange that in order to get really good instructors, it will be necessary to send men home to be trained, but so it is, and I had it from the Chief Inspector himself that he has not one single available man whom he could send out to this country ; but so keen is he about the training of our officers and men that he will be only too glad to receive and to give special instruction to any number of selected non commissioned officers or men who may be sent to him from India for that purpose. In his opinion such men should undergo one years' continued instruction in order to make them thoroughly efficient. It is fortunate for the army that we have such a competent enthusiast at the head of the Gymnastic establishment ; but so far the infection of his enthusiasm has not caught on to many others ; which is much to be regretted.

Independently of the acknowledged fact that a combatant officer ought to be able to fight, it appears incomprehensible that officers do not study, for the sake of recreation and exercise, the beautiful art of fencing, which is the most thorough and complete, as it is also the most intellectual of all physical exercise.

It seems unfair though to throw all, or even much of the blame on our young officers, because they have these good excuses, namely that they were not taught fencing or indeed any kind of fighting when they were at school ; that the instruction given them on joining the army, which has heretofore been very seldom given at all, was of too perfunctory a nature and of too short duration to do them any good, or even to excite their interest in the matter at all ; and that no encouragement whatever has been given to them since. I think that you will all agree that those are very valid reasons.

I may also tell you that the small amount of instruction which is imparted at Sandhurst is almost useless ; and so I have now come to the conclusion which has also been arrived at by others, that the original sinners in respect to this apparent apathy amongst our junior officers are their parents, and their school-masters. I was confirmed in that opinion by reading a most interesting paper contributed to the Journal of the Royal U. S. I. Institute in September last year, by that well known author and accomplished swordsman Captain A. Hutton, and by a visit which I paid in his company to Bradfield College, Berkshire, last December, where I witnessed a most interesting and highly creditable display

of modern fencing, old sword play and gymnastics, under the direct personal supervision of the head-master and two of the assistant masters, in which a large number of the boys of all ages took part, in the school gymnasium. The proficiency and enthusiasm exhibited by all, especially by those engaged in the final bouts was a complete revelation to me. No other school studies, or games were neglected for the gymnasium; and the physique, appearance and good behaviour of all the boys was quite remarkable: there is very strict discipline at that school. My only regret was that so few of them appeared to be destined to be soldiers. What has been so successfully achieved at Bradfield can be just as easy and as well done at all other schools; and I earnestly hope that other principals will lose no time in following the good example set them in teaching our embryo officers the use of their weapons and in enforcing stricter discipline than generally exists at present.

Fencing is an art which should be commenced young, and it will be found so attractive and alluring that in the future as in the past it will never be forgotten and seldom dropped. At the same time there is nothing so difficult about it that it cannot be taken up and worked with success by men of almost any age.

It is, unfortunately, the fashion amongst many people to say that a knowledge of swordsmanship is no longer of any use because the days of hand to hand fighting have long since passed away. But even if that was true as regards European warfare, of which I am not so certain, yet proficiency in the use of arms can never be considered as derogatory to the position of an English officer; and situated as we are with the constant liability to be engaged in fights with warlike tribes in Asia, Africa and elsewhere, where hand to hand fighting with born swordsmen will ever be, as it has been hitherto, the rule; it is absolutely essential that each one of our combatant officers should be a competent master of his weapons; and moreover no one can deny that in the past many a fine British officer could and would have saved his own life as well as the lives of others, and so continue to lead on his men to victory, if he had only been armed with good weapons and had known how to use them.

Occasionally I have been asked by officers going home on leave to tell them where they could get fencing lessons in London; so it may be of use to others if I here give a list of some of those places, and a short account of other gymnasiums that I was allowed to visit.

First comes the place which is known as Angelo's fencing rooms, at No. 32 St. James' Street, kept by the brothers Mc Turk. This was the original fencing school of the great Angelo; at whose death it was taken over by his best pupil and assistant the old Mc Turk, and it is now carried on by the sons of the latter.

Then comes that famous old French maitre d'armes Mr. Bertrand whose rooms are at No. 10, Warwick Street, Soho. Young Bertrand is an able assistant to his father.

Then there is Waite's school of arms at 19 Brewer Street, Regent Street. All these three are conveniently situated for those living anywhere near the Military Clubs.

For those living near South Kensington there is Macpherson's fine Gymnasium in Sloane Street : and for those in the vicinity of Notting Hill or Bayswater there is Chiosso's school at No. 160 Westbourne Grove. The very best instruction can be had at any one of these places, and the charges are moderate and much the same at all. I frequently visited all of them, but I know the last one best, as it was there that I used to take lessons from Mr. Bassett, the fencing instructor.

Through the kindness of Colonel Russell, commanding the Inns of Court Rifle Volunteers I was permitted to visit the fine Gymnasium belonging to that corps, and saw some very fine fencing with foils and with sabres by several of the members. In that school they have the advantage of the services of Sergeant Major Blackburne late of the Life Guards who is supposed to be one of the best instructors in London ; and the keenest interest is taken by all ranks in fencing generally. I was unfortunately unable to avail myself of many kind invitations to visit the school of the London Rifle Brigade, which corps possesses a large number of well known fencers, including those belonging to the Cadet company from King's College School who ably assisted at the fine Exhibition of Swordsmanship which was given at Toynbee Hall after the lecture* by Lieutenant Stenson-Cooke, last January. But the most important Gymnasium in London is that belonging to the London Fencing Club at No. 7 Cleveland Row, St. James's, to which I had the honour of being admitted as a visiting member. This Club consists of some 300 members, and is under the direction of a committee with Mr. W. E. Hartopp as Secretary.

There are two French maitres d'armes as fencing instructors, and a special Gymnastic Instructor, and nothing is wanting to make the Club the most convenient place of the sort that can be seen anywhere. The election is by ballot with an annual subscription and a small entrance donation. Some of the best men in London, including Captain Alfred Hutton may be seen fencing there any afternoon, and a great many officers of the Household Cavalry and Brigade of Guards are active members of the Club.

The place that attracted me most of all was the magnificent central gymnasium at Aldershot ; and thanks the courtesy of the presiding genius Colonel G. M. Fox, I was able to pay two long and most interesting visits to that centre of gymnastic and fencing instruction for the British Army. I can imagine nothing more perfect than the system of instruction for non-commissioned officers and soldiers which is carried on there ; but the time allowed for the instruction of the recruit officers is not half long enough. The material to be worked up is not always very promising ; in fact I saw young officers there who could not possibly have been properly turned out under six months and then they would have still required a further term of six months before they could have passed muster as fencers. However, that is not the fault of the inspector who would gladly work them into shape if he was given time ; but it is the fault of the original bringing up and school life,—I cannot

* NOTE.—Published in the Journal of this Institution.

call it training, of those young gentlemen who enter the service of Her Majesty with the object of leading her troops in battle, and yet who in too many instances are utterly unable to take care of themselves. I say that a very serious responsibility rests with parents and masters who are bringing up our boys in such needless luxury as they enjoy now-a-days and in sending them out into the world inferior in physique sometimes to their own sisters, unused to discipline, and unable to undergo hard work and exposure without falling sick.

I consider that the custom which has been adopted at most of our schools of giving each boy a room to himself is most harmful in every way ; boys are molly-coddled now-a-days to such an extent that many of them have no chance of growing up into hardy independent vigorous men. I should like to see the whole of the interior economy of our boys schools altered back to what it used to be even 20 years ago ; we should not then have to complain that the women were bigger than the men as they often are now, or to mourn the death of so many young men from the dreaded so-called typhoid fever.

I only hope that before long this may be taken up as a national question and thoroughly worked out ; it may then be found that want of stamina has more to say to typhoid than milk or water or anything else.

To quote the words of one of the best writers on physical training.*

"The trouble is, that so many of our latter-day health codes are framed by men who mistake the exigencies of their own decrepitude for the normal condition of mankind."

Often our boys are not allowed to go out of doors in cold weather without a warm comforter of some sort round their necks, and a great coat on their backs ; consequently the first time they are exposed to any unusual hardship, down they go. Our girls, with their scanty clothing, when young, and their totally different school treatment, grow up much harder, and more enduring than the boys. That used not to be the case thirty or even twenty years ago, and it ought not to be allowed to continue any longer.

My chief object in visiting Aldershot was to thoroughly understand the new system of fencing which is being now taught there and which has attracted considerable attention throughout England.

It is known generally as the Italian system, but in reality it is not *the* Italian system but a radical departure from it and is, to be accurate, the Florentine system which was originally invented by Radielli in the middle of the *present* century, and was brought to it's final stage of perfection by that great master Masiello of Florence, whose wonderful performances at the Grand Military Tournament may have been witnessed by some of you.

To make a long story short, Colonel Fox decided from personal experience that this Florentine system was the best in existence, and acting on his advice it has been officially adopted for the British Army ; but no orders have been issued that all officers are to qualify in it.

* NOTE.—A natural method of Physical training by Edwin Checkley.

Whether or not it is the best system for adoption I am not prepared to say, but this I can say, that it differs in all essential respects from the French system which is adopted everywhere out of Italy, and that it has been rejected by all the clubs and schools in London that I know of. It does not follow from this that the system is faulty, because we are a conservative people in many ways and do not take readily to new ways; but the fact is that during the past 5 or 6 years, there has been a great and general revival of fencing in London which is gradually extending to the counties, and many medical men have now recognised the extreme value of that form of exercise and are ordering it for their patients amongst overworked professional men and hypochondriacs. People are very much in earnest about fencing, the schools are full of pupils, and there are constant open competitions at the German club, at Chiosso's and other gymnasiums, which has produced a friendly rivalry amongst the instructors; who of course try in every legitimate way to turn out winners from amongst their pupils, and to out do each other; and thus it has happened that this Florentine system appears to have received full and impartial trial by all, and to have been rejected as being in no way superior to the French system, and as being not considered not quite suitable for Englishmen.

Further, owing to the enormously increased exertion and strain on the whole body which is indispensable to the attainment of anything approaching proficiency in the new system, the doctors have been examining it from a medical point of view, and from what I have heard, I think it probable that they will pronounce against it, especially for boys.

Any one wishing to study the new system should do so at Aldershot, where he will see it worked to perfection by that grand swordsman and athlete Sergeant-Major Palmer and his two chief assistants.

The new book of instruction in the use of the sword which deals most exhaustively with the subject, does not touch on the use of the foil, from which it will naturally be inferred that the foil is to be discontinued as a weapon of instruction in our army, and that, if true, will possibly arouse the opposition of the nation. A careful study of the book and its excellent illustrations will perhaps convey to some, as it does to me, the impression that this system is one of aggressive force in attack, combined with great power of defence against the *edge*, but that it lacks entirely the graceful vigour, the refinement and suppleness of the art as practised in France and elsewhere.

I may observe that the instruction sword referred to in the book, differs in many important respects from the regulation sword, and that many movements which are possible with the one, are almost impossible with the other.

It is highly desirable that we should have one established system for all England, and now is the time to take advantage of the enthusiasm which prevails, to settle definitely which it should be. It is distinctly undesirable that two separate and opposite systems should prevail. Colonel Fox is the great champion of the Florentine system, and Captain Hutton is one of the most experienced exponents of the French:

both of them have done wonders in encouraging the study of swordsmanship in England ; and I believe that between them a way could easily be found to settle this important question ; but who will take the first step ? That is where the difficulty lies. I hope, however, that some one in authority will step in and take the matter up and have it definitely settled in the most public manner possible, either at or before the next Tournament. Both sides are quite confident of being able to prove their respective cases, and both know how desirable it is to have the matter settled one way or the other. A healthy rivalry is a good thing, but acrimonious letter writing in the public press is unseemly and leads to no good.

The accompanying illustrations will shew you the difference between the two systems so far as regards the position of the fencer when "on guard" and when on the "lunge." Three great points of difference will be at once observed, namely, the width of base, the position of the right arm, and the attitude of the body.

In the French system, the distance between the feet when "on Guard" is laid down as twice the length of the foot *as near as may be*, but in the Florentine system it is two and a half foot lengths ; and it is this extra compulsory distance which is found to cause a great strain on the muscles in the region of the pelvis, so much condemned by doctors. Instructors in the French system insist on the body being kept well braced up and the head erect when extended on the lunge, in order that a proper balance may be maintained and the recovery to the position of guard be facilitated ; whilst the Florentine instructors contend that those two important points *i.e.*, correct, balance and quick recovery, (as well as extended reach) are gained by starting from a wide base and throwing the body and head as much forward as possible. Both cannot be right, and the right way only should be adopted, whichever it is.

Again the French work with a supple wrist and fingers, commencing from a bent arm and a free unconstrained position of body, the hand and eye working together under the guidance of the brain ; whereas the exponents of the Florentine school work with a tight claw-like grip and a stiff wrist commencing from a rigid straight arm, the chief work of parry and thrust being done by the elbow and shoulder, on the principle that those parts being nearer to the brain than the wrist, their action must therefore be quicker and more correct than that performed by wrist and finger action. They may be right in this point also, but if they are, all I can say is that they should be called on to prove it by actual trial before their views are accepted ; and I hope that before long some means will be found of proving clearly, not only which system is right, but also which is most suitable for us.

After reading so far, the first questions that I will naturally be asked by most people is this, What is thought of this new system in Italy the land of its birth ? Well, all I can say is that I made careful enquiries on that point when I was in Italy lately, and I found that the system now being adopted by us at home is considered inferior to that of the Roman School, and is not adopted I believe in the Italian Army or Navy. The Roman System differs very slightly from that of France,

and it must be remembered that in Italy as in other Continental countries the Army and Navy represent the Nation, whereas in England they certainly do not. Signor Parizi was sent over to one of our Grand Military Tournaments in London as an exponent of the Italian system of fencing.

I will now pass on to Revolvers.

Three years ago the present regulation Revolver was ready for issue, but the ammunition for it was not ready. Since then the ammunition has been supplied and the revolver has had a very fair trial.

The pistol is undoubtedly a great improvement on the obsolete Enfield revolver, but it is still far behind many others that are obtainable in the market, and cannot compare in any way with either the Colt '45, or with the Smith and Wesson of the Russian army '44 calibre. However both the pistol and the ammunition were made according to Government specifications, therefore no blame attaches to the makers. Had Messrs. Webley and Co., or any other good professional pistol maker in England been given carte blanche and told to produce the most accurate and strongest man-killing revolver in the world, they would probably have been able to do so; but they were not told that; and we know the result.

The Wilkinson Sword Company are now at work on a revolver which, from what I have seen of it, promises to be a formidable rival to all the best existing patterns, but even if they are successful, we shall still want a reliable man-killing cartridge with a propelling charge which; will drop any man within a range of 25 or 30 yards. That same enterprising firm has just opened an underground revolver range at No. 19 Swallow Street, Piccadilly, where for a trifling cost any one can try any revolver that he likes before purchasing it; it is the only place of the kind that I know of in London. I tried two revolvers there myself, using cartridges filled with the new S. V. smokeless powder, which are sold by Eley Bros.

For accurate match shooting, there is probably nothing that comes up to Colt's new single action revolver which has just come out.

Until quite recently, the prevailing opinion regarding the manner in which the revolver should be used on service was that it should be employed first, commencing at about 25 yards distance, and that the sword should be kept ready in the right hand for use at close quarters; but with the present regulation short barrelled weapon it is now considered by many good authorities that the revolver should be retained in the left hand, loaded and ready to support the sword in case of failure to make good the first thrust, or in case of having to encounter two or more antagonists at the same time. There are no doubt many who have known or heard of instances in which officers have missed six shots in succession at men coming at them, and then having failed to make good their thrust or cut, or having broken their sword, have been quite at the mercy of any assailant until some one came to their assistance.

Of course in a fight the chief requisite is a cool head, and if that is backed up by good weapons, and a good knowledge of their use, the result, humanly speaking, can never be in doubt.

During the past three years much great attention has been paid to the use of the revolver, and a most extraordinary improvement in revolver shooting has taken place, but we still want a reliable man-killing weapon that will not jam or stick in continuous firing; and I hope that we shall soon get one. The weightiest evidence against the present pattern of army revolver lies in the fact that few officers will purchase one when they can get any other.

A BRIEF DESCRIPTION OF MADAGASCAR (WITH MAP.)

Compiled by Captain F. C. COLOMB, 42nd Gurkha Rifles.

Communicated by the A. Q. M. G. Intelligence Branch.

The Island of Madagascar is 818 miles long by 300 miles broad at
Extent of Island. the widest.

The interior of the island consists of a series of plateaux which rise
in steps from the coast, finally reaching
Physical features. a general elevation of between 4000

and 5000 feet; the highest main ridge lies nearer to the east coast than to the west. Ascending from the eastern coast three mountain walls are scaled, each with a broad terrace behind it; on the final, or central terrace are Imerina, the home of the ruling race and the most thickly populated district of Madagascar, and Betsileo to the south, which comes next in importance. These terraces on the east are from 30 to 40 miles wide and have very uneven surfaces, being cut up by the action of water into a confused mass of red hills through which it would be a matter of difficulty to align a road. An intricate network of water-courses with precipitous sides intersects the plateaux in all directions. West of the central plateau there are four of these terraces but they are not so distinctly marked as on the east and are more easily traversed. On the east the ranges converge to a common point towards the north, while to the south they remain distinct as far as S. Lat. 22° when they are crossed by an east and west range and gradually subside.

The upper plateau is broken up by low ridges of red clay which run
General aspect of upper plateau. across it, generally N. W. to S. E.; it has a general elevation of 4500 feet and is bare except in the hollows where there are patches of forest. There are large tracts of barren moorlands, which are almost uninhabited.

An almost unbroken ring of forest extends in a continuous line all
Forests. round the island except at one point on the N. W. coast near cape St. André, where the lines of forest overlap one another for about 100 miles, leaving an opening of about 70 miles wide between them. On the eastern side this forest belt divides into two with the long narrow plain of Ankay and the Antsihanaka province between, but unites again to the north of the latter where it is broadest, being about 40 miles wide (west of Antongil Bay). Its average breadth is about 15 miles and its position is on the hill slopes facing the ocean.

The hills are almost entirely granite or gneiss except in the central
Geological formation. provinces where the rock is volcanic. About 20 miles south of Antananarivo are the Ankarat mountains containing the highest known elevations in

Madagascar. This mass contains five peaks, all over 8000 feet, the highest being 8950 feet. The whole of this range is volcanic in origin. Some 40 miles S. W. of the capital in the neighbourhood of Lake Itasy are a series of extinct volcanoes. Throughout the volcanic districts hot springs are common. The supersoil is a sandy red clay which varies greatly in its hardness.

The climates of the east and west coasts differ materially. The east coast is often stormy and generally wet while the west coast is calm and dry.

On the east coast there are two distinct seasons. The fine season from May to the middle of October, when strong breezes blow during the day from the S. and S. E. and during the night from the S. and S. W. The bad season is from the end of October up to April. The hottest and most unhealthy months are January to March, and at this season storms with floods of rain are constant, the wind being light from N. E. during the day and from N. and N. W. during the night.

In the low lying coast lands the climate is hot, damp and feverish.

A virulent type of malarial fever is common along the coasts and in the low lands, and the Malagasys look on this as their chief defence against invasion.

Diseases.

The east coast has few harbours and owing to the frequency of storms, landing is difficult. Many of the streams are navigable in the interior but their entrances, particularly on the east coast, are blocked up with sand banks. These bars have caused the formation of vast marshes along the coast which result in the low lands being very unhealthy.

Coasts and rivers.

A chain of these coast lakes or marshes extends from Tamatave south to Masindrano, a distance of some 240 miles; this stretch of lagoons is navigable by small boats, portages at times being necessary.

Along the N. W. coast land locked bays, where a landing can be effected in safety, are numerous.

Madagascar does a large export trade in bullocks and these are procurable in large quantities throughout the island.

Supplies.

In the low lands wild pigs are very common and herds of wild cattle are numerous. In the interior sheep, goats and pigs in large numbers are available and are cheap. Rice is the staple food of the country and an almost unlimited supply is procurable; it is grown mostly on the terrace system, as flat valleys are few.

Tribes and population.

The inhabitants of Madagascar are split up into three main tribes.

(1). The Betsimisarakas occupying the narrow plain between the hills and the sea on the east coast; their towns are small and their whole numbers do not exceed 100,000. They are a more hardy and energetic race than the Hovas and though smaller (average height 5 ft. 5 in.) are wiry and well made. Colour darker than the Hovas, hair generally woolly, features of the negro type; in disposition they are naturally peaceful and lazy.

(2). The Sakalava or Sukalavs occupy the entire west of the island. They are broken up into numerous sections constantly at feud the one with the other. They are a fine race, superior to the Hovas in appearance but not so intelligent; they are tall and strongly built with an African cast of countenance.

(3). The Hovas, with an allied race, the Betsileo. This tribe comprises the ruling race and occupies the whole of the central plateau of the island. Imerina and Betsileo, the homes of the Hovas and Betsileo are the most thickly populated districts in Madagascar. These two provinces have a joint population computed at about 1,700,000 souls.

There are also many sub-tribes.

The Island is divided into 20 main provinces, and these are again sub-divided into numerous districts.

Divisions of country.

Of the provinces, that of Ankova is the most important, comprising as it does the districts of Vonizongo, Imamo and Imerina.

This district, the most important in the Island and containing the capital Antananarivo which alone has a population of 80,000,* is 110 miles long

District of Imerina.

by 90 broad. In the central portion of the plateau the population is most dense and here the villages are crowded together; the extent of ground under cultivation is about 1250 square miles. The plateau is crossed by ridges of red clay running generally from N. W. to S. E. and on these ridges are built the villages and towns. The district is well watered by many streams which unite, finally forming the Ikiopa river flowing N. W. to the sea. On the plateau this river flows sluggishly but it leaves the high land by a series of falls and is henceforward a boiling torrent until the plains are reached. Elevation of plateau 4500 feet. Population of district a million. After the capital Ambohimanga with a population of 5000 is the next town in importance; the remaining towns contain from 2000 to 3000 souls each.

This district lies between lat. 20 and 22 south and some 150 miles from the capital, and is next in importance to the Imerina plain.

Betsileo District.

The population is scattered in many small villages each with 100 to 150 inhabitants. The towns contain from 150 to 300 houses and the total population of the district is not more than 300,000. Chief feature of the district is the cultivation of rice.

About 100 miles north of the capital and separated from it by an

almost uninhabited district is the province of Antsianaka. The province is

a vast basin surrounded by hills having a clear lake (Alaotra) and enormous swamps in the centre, its extent being about 60 by 35 miles. The Alaotra lake is 37 miles long by four or five broad. Population 40,000. Halfway between Imerina and Betsileo are the valleys of Betafo and Sirabe with a population of some 100,000 people.

* Some authorities say 8000 dwellings and 25,000 souls in all.

Harbours on the North-West Coast.—There are five splendid harbours on the north-west coast, all within 20 miles of Cape Amber as the crow flies: they are Port Robinson, Port Jenkinson, Port Liverpool, Port Chancellor and William Pitt Bay. All these harbours are deep enough for the largest vessels and are easy of access.

On the West Coast are Nossi-vé, Tullér. Morondava, Bélo, Tsim Anandrafozana, Maintirano, Baly Bay, Bombetok Bay, Mohajamba Bay, Narinda Bay and Passandava Bay; the last named is the broadest and deepest on the West Coast and possesses many fine harbours.

Majunga.—A town on the West Coast situated at the entrance to Bombetok Bay, which affords a safe anchorage. Country round is capable of furnishing a large supply of provisions. This town is of importance as being the starting point of the easiest route to the capital.

On the North-East Coast are Ports Frances, Loquez and Vohemar, and Port Choiseul in Antongil Bay.

On the East Coast are St. Marie, Fénoarivo, Foule Point, Tamatave, Mananoro and Vatomaniry.

Port St. Marie.—On St. Marie Island is an enclosed harbour suited to the largest vessels.

Mahanbo is about 20 miles north of Foule Point and affords a good anchorage in deep water. The coast here is more healthy than at Foule Point.

Foule Point, 37 miles north of Tamatave, called locally Mahavelona. It is a tolerably safe port during the fine season for vessels of any tonnage and has a firm anchorage. Bullocks to the extent of some 2,000 and rice in large quantities are exported from this town chiefly to Mauritius. The place is most unhealthy owing to marshes about the town.

Hivondro.—Just south of Tamatave at the mouth of the Hivondro river, which is navigable for many miles inland.

Andevorandé.—Three days' land journey south of Tamatave; a place of some 800 or 900 huts. Here the main road from Tamatave to the capital leaves the coast and turns inland.

Mananzare.—As a trade port second only in importance to Tamatave. The place is of little importance in itself, but is the trade port for Betsileos. Trade is mostly with Mauritius and is in the hands of English, American and German firms.

On the South Coast are Fort Dauphin and Ports Croker, Cruizer and Masikora.

Fort Dauphin.—This place was formerly a French settlement, but is now in the hands of the Hovas. The climate here is more healthy than on any other part of the coast, resembling that of central Spain and Italy. It affords a good port for merchant vessels, and warships can anchor under favourable conditions within 1,000 yards of the shore, but the anchorage is confined and the bottom changeable.

There are no roads in Madagascar, though along the coasts in places are tracks along which carts could ply. All communication with the interior is by rough foot paths.

Communications.

The ordinary and most direct route, though not the easiest, to Antananarivo starts from Tamatave on the east coast and follows the coast south for 60 miles to Andeverandé. Along this portion of the route is a chain of lagoons connected by canals which facilitate transport; so far the route is easy, passing through park like country and presenting very few difficulties. From Andeverandé the route strikes inland and follows the Tharoka river for some 15 miles. The Tharoka is navigable by small boats though the bar at its mouth prevents shipping entering the channel. Along the river the route passes through an unhealthy country, fairly fertile and dotted with villages. At Maromby the stream becomes unnavigable and for the next three stages a succession of hills and valleys are travelled over, the first hill range being encountered at the second stage from the coast: villages are fairly numerous and there are no great difficulties until the forest of Almanzotra is entered where the hills form a series of precipices and ridges. The forest belt can be traversed in about 36 hours. The trees are of enormous size, the foliage thick and in places impenetrable; masses of rock are strewn on all sides amidst the tangle of jungle and many gullies and waist deep muddy hollows have to be circumvented. At times swamps and shaking bogs covered with a net-work of grass are crossed. On the western extremity of the forest is situated Moromonga, one of the largest towns in the island after which the plain of Ankay is crossed for a distance of 15 miles. The Angavo pass, the highest elevation crossed on the route is next scaled and a second and smaller belt of forest is entered, beyond which lies the open plain of Imerina, the home of the Hovas. On these uplands the country is a sea of bare hills the sides of which are scamed and scored by the tropical rains and dotted over here and there with tiny thatched huts made of red mud. Right ahead is seen a ridge, stretching north and south for about two miles and on this is situated the capital. The first objects which strike the eye are the four stone towers of the Queen's Palace, situated on the centre of the ridge. The town is built on terraces on the hill side.

The difficulties of this route are great, an endless succession of hills being crossed. Here and there are short, easy stages, but for the greater part of the way the path will only allow of two or three abreast at most and lies in the beds of gullies made by the torrential rains; at other points the path must be cut through dense fever laden forest. Here and there are swamps of thick red mud in which the traveller sinks to his waist.

The route takes eight to ten days to traverse; the low unhealthy coast is best avoided by making Andeverandé. There is said to be a route leading from Tamatave direct to the capital but it has never been explored. From Andeverandé to the capital is 98 miles in a straight line and 165 by road.

The easiest routes, though the longest, are via Majunga or Boyana Bay, on the N. W. coast. From Majunga there are two routes. The first is described as follows, starting from the capital:—

The descent from the Imerina plateau is in the upper portions more gentle than that towards the east coast; four broad terraces are crossed and the route is one of the easiest in the island. First cross the district of Vonizongo where villages are numerous, then descend by an easy path to north Vonizongo, a valley 25 miles in length; population now thin. The second descent of 800 feet is by the pass of Ambatomena and the terrace reached is 48 miles long; here there are military posts which guard against an inroad by the Sakalao tribes who can only enter Imerina by this road. For two days uninhabited country is now crossed; strike the Ikiopa river which at a point 16 miles further down (Mevatanana) becomes navigable for canoes. Hence to Bemba-tooka Bay is 85 miles. The whole journey takes 20 days.

The second route from Majunga is along the Ikiopa at first, then up the Betsiboka river, and eastern tributary of the Ikiopa.

The route from Boyanna Bay is said to take 25 days, but nothing is known regarding it. Boyanna Bay lies to the west of Majunga; and as the break in the encircling ring of forest occurs in this vicinity, it is probable that this route lies throughout through open country.

The Betsileo province is most easily reached by the Matitanana

Route to Betsileo.

river which falls into the sea on the East coast in lat. 22° 25' S. For the first 30 to 40 miles the route is over undulating country with here and there patches of wood; the hills gradually increase in height until the main range is reached, up which there is an ascent of some 2,500 feet to the Betsileo plateau. This range is clothed with dense forest, to traverse which a long day's march is necessary. The range is about 45 miles from the coast.

There are practically no roads fit for wheeled traffic and except for

Transport.

a few bullock carts on the plains of the eastern coast, there is no wheeled carriage. Travelling is generally done in palanquins and all goods are carried by porters.

The canoes plying on the rivers carry 1½, 2½ and 5 tons, and re-

Boats.

quire crews of from 6 to 14 men. The largest boats can accommodate about 160 men.

Unskilled workmen 2½ to 3 dollars per month; skilled carpenters

Cost of labour.

from four to six dollars; this does not include keep which costs about ¾ dollar per month.

The French Naval division in the Indian waters consists of the fol-

French Indian Ocean fleet.

lowing eight vessels:—

1. Primauguet.....(Flagship) 3rd class cruiser of 2,270 tons.
2. Correze.....Hulk, at Diego Suarez.
3. Hugon.....3rd class cruiser, under orders to be relieved by the "Dumont d'Urville" leaving Cherbourg in October 1894.
4. Papin.....Despatch boat.
5. Rance.....Despatch transport.

- | | |
|--------------------|--|
| 6. Lynx | } Gunboats, the last being stationed at Obock. |
| 7. Sagittaire..... | |
| 8. Etoile..... | |

In view of the impending difficulties in Madagascar, orders have been issued for the following reinforcement to join the French fleet :—

- | | |
|--|--------------------------|
| 1. Dupetit Thomas..Cruiser, 1,950 tons. | |
| 2. Dumont d'Urville.1st class despatch vessel of 825 tons, to relieve the "Hugon." | |
| 3. Romanche | Transport of 1,585 tons. |
| 4. Gabès | } Gunboats of 473 tons. |
| 5. Météore | |

All the ships are wooden and belong to the old fleet, but are quite effective enough for the blockade of the coast.

A force of 15,000 French is held in readiness to proceed to Madagascar. This force is made up of French expeditionary force. Zouaves, African Light Infantry, and the Foreign Legion, with eight batteries of Artillery and two companies of Engineers. The landing place will be Majunga on the north-west coast, whence the expedition will follow the Ikopa river to the capital.

The regular army of Madagascar consists of about 14,000 troops organised on the European model. These are divided into two divisions each of 6,600 officers and men; each division is again formed into two brigades of three battalions each, while the transport for artillery, ammunition, and sick and wounded numbers 1,500 men.

The artillery consists of two 4-gun batteries of 7-pr. mountain guns, while four more of these guns are on their way out from Europe; two batteries of six guns each of 5-barrelled Gardners, and six batteries of 6-barrelled Gatling guns. They have about 100,000 stand of good Snider rifles and an ample supply of ammunition. Of late years much attention has been given to the musketry training of the army.

A levy *en masse* of the population would produce about 300,000 fighting men, some 150,000 of which would be armed with spears. The Hovas have lately been busily engaged in preparing for a general and rapid mobilisation. It is said that they will not attempt to hold the coast, but will stubbornly defend every foot of the route to the capital.

Major Wolf, a German officer, who has lately visited Madagascar, describes the Malagasy soldiery mounting guard over the Palace at Antananarivo as follows :—" Their equipment is wretched; they have no boots and their uniforms are in rags; their rifles are rust-eaten and dirty and are absolutely unserviceable. In physique the men are small, weak-looking and thin, the majority of them suffering from forms of skin disease."

The Englishmen at present in the employ of the Hova Government are Mr. Parret, adviser to the Prime Minister, Colonel Shervington, an ex-Colonial officer and Captain Hall, late of the Militia. The last two officers are engaged in training the Hova troops.

The Hovas have no navy with the exception of an ancient yacht, which is of no offensive or defensive value.
Hovan Navy.

The British East Indian Squadron, exclusive of Indian Marine, British Fleet in Indian waters. consists of ten vessels :—

- (1) Bonaventure.....2nd class cruiser, 4,360 tons. Flagship.
- (2) Brisk *.....3rd class cruiser, 1,770 tons (steel), 6 guns.
- (3) Cossack *.....3rd class cruiser, 1,770 tons (steel), 6 guns.
- (4) Lapwing.....1st class gunboat, 805 tons.
- (5) Magdala.....Armoured coast defence ship, 3,340 tons.
- (6) Marathon.....3rd class cruiser, 2,950 tons.
- (7) Pigeon.....1st class gunboat, 755 tons (composite), 6 guns.
- (8) Redbreast.....1st class gunboat 805 tons (composite), 6 guns.
- (9) Plassy.....1st class gunboat, 735 tons (composite), 6 guns.
- (10) Sphinx.....Special service vessel, 1,130 tons (steel), 7 guns.

Telegraphic communications.

The French in Madagascar communicate with Europe as follows ;—

By telegraph from Antananarivo to Tamatave, whence a French despatch vessel carries messages to Mozambique, a voyage occupying at least five days. Hence direct to France by submarine cable.

! Mauritius is in communication with England by submarine cable *via* the Seychelles to Zanzibar, and thence direct to England.

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The Hovas have no nav
Hovan Navy.

The British East India
British Fleet in Indian waters

- (1) Bonaventure.....2nd cl
- (2) Brisk *.....3rd
- (3) Cossack *.....3rd
- (4) Lapwing.....1st cl
- (5) Magdala.....Armed
- (6) Marathon.....3rd cl
- (7) Pigeon.....1st cl
- (8) Redbreast.....1st cl
- (9) Plassy.....1st cl
- (10) Sphinx.....Specia

Telegraphic communications.

By telegraph from Antananarivo
despatch vessel carries message
at least five days. Hence direct

Mauritius is in communication
via the Seychelles to Zanzibar, and

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By Major A. W. T. RADCLIFFE, 14th Sikhs.

Object.

Object. the scheme as simple as possible, at the same time observing all the general principles laid down in the drill book. With native troops especially simplicity is most essential.

The advantages claimed for the following scheme are that, being so simple, it can be easily taught. It has

Advantages.

Advantages. all the advantages of the "Old British Line" as the men advance shoulder to shoulder. The sections and companies remain intact throughout the advance, so that each section and company remains under the actual command of its own officer and non-commissioned officers.

The supports and reserves being in echelon are ready at any time to meet flank attacks, no cavalry therefore could attack them unawares.

Flank attacks.

The formations being in single ranks casualties are reduced to a minimum, and the lines being also in echelon offer a small mark for enemy's artillery. Great latitude is allowed in this scheme to subordinate commanders in whose hands in the day of battle the actual control and leading of the men would remain.

Distances. Distances are not laid down definitely, the conditions of the attack being left to the senior officer commanding to decide what distances would be best.

Distances.

The following examples are given :—

Ex. I.—A battalion of 8 companies forms the firing line and is ordered to extend from quarter column.

0 0 0 0 0 0 SCOUTS.
0 N.C.O.

Ex. I.

	5	↑	1	
oooooooooooo	oooooooooooo	FIRING LINE.		
L. 6 paces.	7.			
	O N.C.O.			

O N.C.O.

MAJOR

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6 2

0000000000 - C.O. 0000000000 SUPPORTS.

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A line of quarter column of half battalions is formed with 6 paces between the half battalion thus—

<u>5</u>		<u>1</u>
<u>6</u>	6 paces	<u>2</u>
<u>7</u>		<u>3</u>
<u>8</u>		<u>4</u>

The *Scouts* will be sent out first and ordered to extend about 10 paces, *No. 1 and 5* companies will then advance, form single rank and extend so as to cover the front allotted to the battalion (or at first only the two inner sections may be extended) according to the direction of the battalion commander.

No. 2 and 6 form single rank and incline to either flank. The inner flank man of *No. 1* covered by a non-commissioned officer will give the direction.

No. 7, 3, 4 and 8 form single rank and also incline to either flank.

Words of Command.—"The battalion will form for attack."

"As a battalion in the firing line."

"*No. 1 and 5* will form firing line,

Words of Command. "*No. 2 and 6* Supports,"

"*No. 3, 7, 4 and 8* Reserve."

"*Scouts* advance."

A non-commissioned officer will proceed in command of the scouts, the latter will rejoin their sections as required, commanders of companies will advance always with their inner sections, the junior officer remains in charge of the remaining sections until all the latter are absorbed in the firing line, connecting files will be sent out. During the advance *No. 2 and 6* will reinforce as required by sections from their inner flanks.

No. ^{1 and 5}_{Firing Line.} will gradually close in during the advance in their inner flanks and form single rank.

No. ^{3 and 7}_{Supports.} will press on and reinforce firing line by sections from their inner flanks.

No. ^{7 and 8}_{Reserves.} will be in single rank and keep in echelon in the flanks and reinforce supports and the firing line in the same manner.

Direction. Intervals.

Direction as laid down in drill book.

Intervals 2 paces between sections, 6 paces between companies in the firing line.

Distances.

Distances between firing line, supports and reserves to be left to the

discretion of the officers commanding these units.

The *advance* will be in single line as far as practicable, afterwards by rushes by alternative companies or half

Advance.

battalion. The right inner flank company will always lead and be the base company. When the supports

No. 2 and 6 companies have reinforced the firing line, the reserves will gradually close up nearer to the firing line, keeping in echelon on the flanks, thus ;

No. 6.	No. 5.	No. 1 Co.	No. 2 Co.
oooooooo	oooooooo	oooooooo	oooooooo

No. 7.
oooooooooooo

No. 3 Co.
oooooooooooo

No. 8.
oooooooooooo

No. 4 Co.
oooooooooooo

and reinforce as required from their inner flanks until the whole battalion is absorbed in the firing line.

The order for reinforcement. The drill book lays down how the reinforcements should be carried out. The order to reinforce should be given accordingly.

Description of firing to be employed. The senior officer with the firing line should decide when firing is to commence during the advance and he should also order the description of firing to be employed.

The above is the plan of attack from quarter column for a battalion in the first line only. The 2nd and 3rd lines would consist of a battalion in each and both lines would advance in formation suitable to the nature of the ground, but when approaching enemy's position the 2nd line may be in single rank, or in such formation as required to storm the selected parts of the enemy's position, and in conjunction with 1st line, charge the position with the bayonets as laid down in the drill book.

The 3rd line would act as laid down in the drill book. "Firing" during the advance will be by section 3rd line firing. volleys or as otherwise directed by the senior officer directing the advance ; long range volleys are recommended when practicable.

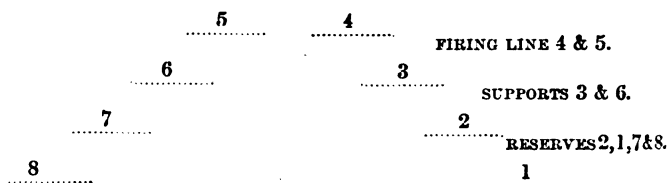
Independent firing will be ordered when the firing line receives a check, which generally would occur about 300 yards from enemy's position. Independent firing. The cease fire will sound just before the 2nd line arrives and previous to charging the position.

After the position has been taken, the troops in 1st and 2nd lines will reform at once in rear of the 3rd line, the latter will pass through 1st and 2nd lines, and fire volleys by companies on enemy retreating. Troops to reform.

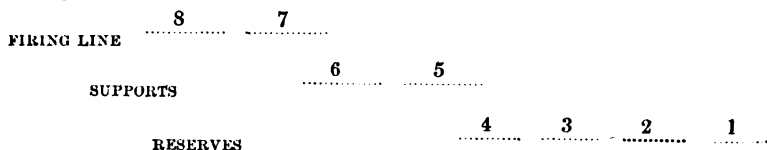
The above system can be carried out by a battalion of any strength; frontage (according to this plan) required about 1 pace per man, but the casualties would reduce this probably to $\frac{1}{3}$ rd of pace per man or less.

Ex. II.—Forming for attack from line and flank.

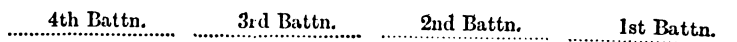
The battalion should be practising from line, either from the centre or right and left flank. If from the centre, it would extend, thus ;



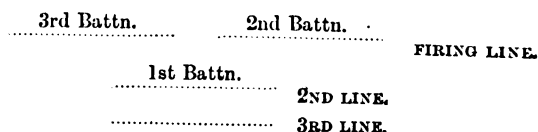
or if from a flank, when the battalion forms part of the firing line in a brigade ;



In line of four battalions where two battalions are in the firing line, thus ;



The 2nd battalion and 3rd battalion are told off to the firing line, the 1st battalion to the 2nd line and the 4th battalion to the 3rd line, thus ;



Where the 1st battalion and 4th battalion form 2nd and 3rd lines as ordered,

If the battalion is No. 3rd battalion then the extension would be from the right flank in the same manner.

If the brigade consist of 3 battalions in line and the battalion is the outer and is ordered to form the 1st line, the extension of the battalion will be from the centre as described before.

Ex. III.

When there are three battalions in the brigade in line, thus ;

$\frac{1}{2}$ Battn. of No. II Battn.	$\frac{1}{2}$ Battn. of No. I Battn. in	
.....	.....	FIRING LINE.
.....	
.....	
$\frac{1}{2}$ Battn. of No. I	$\frac{1}{2}$ Battn. of No. II.	
.....	.....	2ND LINE.
..... III Battn.		
		3RD LINE.

The extension can be as above, $\frac{1}{2}$ battalion of No. 1 and No. 2 being in the firing line, the remaining $\frac{1}{2}$ battalion in the 2nd line, and the 3rd battalion in the 3rd line.

The inner sections, that is the left section of No. 1 half battalion, and the right section of No. 2 half battalion advancing and are reinforced on either flank by the remaining inner sections as before.

Flank attacks. Flank attacks will be met as a rule by the 3rd line.

It is calculated that in a successful attack the firing line would lose about one-fourth therefore the frontage required for a brigade would be the strength of firing line in single rank minus one-fourth, i.e., 800 men in firing line would take up, 800 minus 200 or 600 paces, add 42 + 48 distance between section and companies, total frontage required about 690 paces by the time it reached the position of the enemy.

THE PEACE ESTABLISHMENT OF THE GERMAN ARMY.

By Lieut. R. G. BURTON,
1st Infantry, Hyderabad Contingent.

The law of the 3rd August last year increased the numbers of the German army in time of peace by 1,800 officers, and 70,000 lower ranks. By the 17th October of the same year the new organization of the German standing army was completed in all its details. The change from a three years to a two years period of service with the colours, the augmentation of the effective force of the army, and the formation of new corps and of new staff and administrative establishments were carried out simultaneously.

Analysing such a rapid reorganization of the army, the French Military Journal *Revue Militaire de l'Etranger*, gives in detail, founding its information on official documents, among others on the estimate of the military department for the financial year 1894-95, both the total numbers of the German army on a peace footing, and the numbers of the different arms forming their fighting units. The investigation of the Journal, giving as it does in exact numbers the whole strength of the army, presents a matter of considerable interest.

We will first of all refer to the general strength of the army, which is constituted as follows:—

	Officers.	Lower ranks.
1. The personal establishment of the Government, staff and educational establishment &c.	3,608	12,959
2. Infantry	12,120	371,546
3. Cavalry	2,328	64,884
4. Field Artillery	2,651	58,424
5. Garrison Artillery	794	22,738
6. Engineers	728	19,015
7. Commissariat	305	7,527
Total ..	22,534	557,093

If to these numbers we add 9,000 volunteers serving for one year 6,319 surgeons and other non-combatants, and 3,661 men of lower rank, serving for salary, then the total strength of the German army on the peace-footing will be: 28,853 officers and 569,754 lower ranks. The Corps of general officers of the German army consists of 335, counting 27 generals who are not on the active list.

The staff consists of 836 officers, of whom 208 belong to the general staff. In the infantry 33 regiments have each in the first three battalions, 22 officers, 671 lower ranks and 7 horses; 106 regiments have per battalion, 18 officers, 607 lower ranks and 7 horses; 11 regiments—18 officers, 629 lower ranks, and 7 horses; 7 regiments—18 officers, 588 lower ranks, and 7 horses; 16 regiments—18 officers, 601 lower ranks and 7 horses; 173 half battalions have each 8 officers, 193 lower ranks, and 7 horses. The rifle corps consists of three lots; 4 battalions have each 22 officers, 680 lower ranks and 7 horses; 3 battalions have

each 22 officers, 650 lower ranks, and 7 horses, and 12 battalions have each 22 officers, 614 lower ranks and 7 horses.

The following is the composition of the cavalry :—

			<i>Officers.</i>	<i>Lower ranks.</i>	<i>Horses.</i>
10 Regiments, each	...	...	25	731	763
51 " "	...	...	25	701	743
32 " "	...	...	25	686	728

The field artillery consists of 500 batteries. The following is their composition :—

			<i>Officers.</i>	<i>Lower ranks.</i>	<i>Horses.</i>	<i>Guns.</i>
3 Batteries, each..	...	...	4	132	83	6
21 " "	...	...	4	128	76	6
235 " "	...	...	4	119	61	6
134 " "	...	...	4	111	45	4
54 " "	...	...	4	100	45	4
20 Horse batteries, each...	...	...	4	120	129	6
4 " "	...	...	4	112	114	6
23 " "	...	...	4	91	85	4
6 Instruction batteries...	...	...	4	150	79	6

From the table shewing the division of the artillery into army corps it appears that in 10 corps there are 23 batteries each, in 3 corps, 22 batteries each, in four corps, 25 batteries each, and in the remaining 3 corps 31, 33 and 34 batteries respectively. Each of the 37 battalions of garrison artillery has 18 officers; as regards the numbers of the lower ranks, they vary from 571 to 600 men, according as the battalion is on the ordinary or augmented establishment. In the Engineer forces one of the pioneer battalions consists of six companies, 7 have five companies each, and 19 battalions four companies each. The company consists of 4 officers and from 135 to 154 lower ranks. The numbers of 7 railway battalions and of the following division are—officers 167 and lower ranks 4,441.

In the commissariat and transport are 65 companies, 3 battalions having each 4 companies, 17 battalions each 3 companies, and 1 battalion 2 companies. A transport company consists of 4 officers, 101 to 112 lower ranks, and 63 to 87 horses.

In this manner, says the journal in conclusion, the new organisation of the German standing army is already an accomplished fact, and its results consist, not only in the increase of the numbers serving with the colours, but in a considerable change in the conditions of the conversion of the land forces from the peace to the war establishment. The infantry, with a strength of 150 men per company, is already three-fourths of the strength of the war establishment.

The mobilization of the infantry would only call for two lots of reservists, and two others would remain for the formation of reserves. Generally speaking in the active army the continuous service men will form the majority of the established strength, and the reservists—the minority. On the other hand in the composition of reserves for the field there will be a considerable number of reservists.

All these results have already been attained, and they have so increased the active strength of the German army that, in the opinion of the French journal, in 25 years time 4,300,000 men trained for war service will be ready to confront the French army.

OCCASIONAL NOTES.

The *Army and Navy Gazette* of December 8th 1894 draws attention to a new pistol about to be brought

A new Pistol.

out by a firm in Berlin: It is called the Borchardt Automatic Repeating Pistol. The grip is nearly under the centre of gravity instead of at the butt; the opening of the mechanism, the ejection of the empty shell, the cocking, reloading and closing of the mechanism are effected by the recoil of the barrel.

The "Exterminateur" consists of the propelling engine which re-

The Turpin "Exterminateur."

places the gun and of the "projectile giroscopique antopropulseur." The engine consists of a light tube of steel, aluminium or wood, sheathed with metal which is fixed in such a manner that it may be aimed in any direction. The field apparatus known as the "Caisson Mitrailleur" is proposed to be of steel plates 5 mm. to 6 mm thick, and with its limber would weigh something over 15 cwt. A single engine, it is claimed, can in a few seconds throw sixty-seven 11 lb. shells which would cover an area of 30,000 square metres with 35,000 exploding balls. The projectile is of the nature of the old "fusée de guerre" and is based upon the Congreve rocket. To the projectile would be affixed a cartridge filled with powder which would burn during the flight and with the assistance of a screw the projectile would thus be given a rapid rotary motion. Range of weapon 300 metres. French opinion is generally against the invention as not being of the practical service which the inventor claims for it.

(*A. and N. Gazette* 8-12-94.)

Invented by an ex-officer of the United States Army. The "Cloth-

New Clothing Case.

ing case" is of light canvas weighing only 8½ oz. Three of these being fastened on to rifles make an effective stretcher for carrying wounded. The case will hold the soldier's kit and it is intended to be worn in the rolled blanket suspended from the left shoulder. The invention was reported on favourably by a board of officers of the United States Army. The clothing case is to take the place of the knapsack.

(*A. and N. Gazette* 15-12-94.)

A trial of the Loris breastplate and of the Daudeteau rifle of 6 mm.

The Loris breastplate and the Daudeteau rifle.

5 calibre (.354 inch) was made at St. Denis on the 6th November 1894. Trials of the rifle were first made at a range of 50 metres, the targets being a block of pine wood planks two metres thick and a plate of steel 12 mm. thick. Two shots at each object were fired from the Daudeteau rifle with a result that the sheet of steel was perforated while the penetration into the planks, was

1 m. 0·8. Two shots under the same conditions and at the same objects were then fired from the 8 mm. rifle; in this case the steel was not pierced and the penetration into the pine planks was only 1 m. 0·8. The Loris breastplate was then submitted to the test. The composition of the breastplate is kept strictly secret by M. Loris; in outward appearance it resembles a carriage cushion and as it is quite elastic it would appear that metal plates take no part in its composition; its thickness is between 8 to 10 centimetres and its weight about two kilogrammes. M. Loris also produced lighter breastplates which he proposed to submit to bayonet tests. A shot from the Daudeteau rifle was then fired at the cuirass at a range of 20 metres, the result being that the cuirass was pierced; the subsequent effect on the sheet iron backing, against which the breastplate had been placed showed that after passing through the latter the projectile still retained a velocity of about 550 metres per second. M. Loris would allow no examination to be made of the effect of the shot on his breastplate. A round was then fired from 8 mm. rifle at the breastplate but in this case through penetration did not take place. The Loris breastplate had previously been submitted to experiments with numerous rifles of varying calibre but had never previously been pierced through.

(*Revue du Cercle Militaire 5th Jan'y. 1895.*)

An interesting description of this invention is published in the *Revue du Cercle Militaire* of 30th December 1894. It consists of an ordinary pair of field-glasses in one of the tubes of which is fixed a compass by

means of which the magnified image of a distant object and its bearing may be taken at one and the same time. The compass is specially graduated and lies close under the large object lens, its rotation is checked by means of a button passing through the lower side of the tube and acting on a flexible arm. Above the compass, at an angle of 45 degrees is a small reflector by means of which bearings may be read, a screw close to the eye piece acting on the reflector so as to bring it into the proper position according as the line of vision is directed above or below the horizontal line.

The combined Compass and Field Glass is at present made in three sizes the price being 100 francs, 90 francs and 75 francs respectively.

TRAVELLING MILITARY TURRETS.

The following is a description of the "movable protected gun carriage" or "trench armoring," constructed at the Gruson works in Germany under the instructions of Major Schumann. The Schumann campaign turret consists of an iron plate cylinder about four feet in internal diameter provided with a door, P., and closed at its base by a metallic floor and at its top by a convex cupola ten inches in thickness

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(Fig. 1.) At its upper part the cylinder is strengthened by a ten inch thick forged iron ring. The roof, which is essentially moveable, rests through the intermedium of three supporting branches upon a central column, C, whose lower extremity, in the form of a pivot, is capable of revolving in a step bearing fixed to the floor, and the circumference of which is toothed.

Under the cupola there is in battery a $1\frac{1}{2}$ or 2 inch rapid fire gun served by two men, one of whom has charge of the ammunition, while the other, upon order, does the loading, pointing and firing.

The cheeks, F, in which rest the trunnions of the gun, are invariably connected with the roof, so that the recoil is completely suppressed. At the moment that the piece is fired, the cupola oscillates slightly, but, owing to the position occupied by the centre of gravity, it immediately rights itself. The man charged with the manœuvring remains seated upon the chair, S. He points through the gun port formed in the cupola, and then, after the port has been secured against the danger of a reply by the enemy through a revolution of 180 degrees, he can survey the field through a sight hole, H, provided with a shutter.

In order to point in direction, the gunner causes the cupola to revolve by manœuvring the hand wheel, D, upon the axis of which is mounted a pinion that engages with the teeth of the step bearing. This axis, which traverses the arms, E, and G, keyed upon the column, C, can be rendered immovable when occasion requires it.

The apparatus for upward pointing consists simply of a screw that the seated gunner manœuvres by means of the hand wheel, V. The amplitude of the angle of firing may be varied by ten degrees above to five degrees below the horizon. In the interior of the cylindrical turret there are ammunition chests, M, suspended from a circular rail along which they can be made to slide. The gunner brings them within his reach in measure as the exigencies of the firing require it. As soon as one of the chests is empty he unhooks it and passes it to the assistant, who replaces it by a full chest.

The cartridges used are metallic. The charge of powder is enclosed in a brass cylinder fixed to the base of the projectile. The supply is 160 shots for the $1\frac{1}{2}$ inch calibre and 130 for the 2 inch. The turret that has just been briefly described is essentially transportable. To this effect, it is mounted upon a two-wheeled vehicle of special construction, drawn by six horses (Figs. 2 and 3).

The axle is bent twice at right angles so as to diminish the height of the carriage. To this axle and to the frame of the vehicle are fixed two rails about six feet in length upon which the turret rests through the intermedium of four wheels, L L (Figs. 1 and 2).

From the carriage are suspended two other lengths of rail that are laid upon the ground in the prolongation of the others at the spot that the turret is to occupy after being removed from its carriage. Upon reaching its destination, the turret is set into the earthwork of the parapet that it is to arm. There then emerges from this earthwork nothing but the cupola of the turret and the chase of the gun (Fig. 4). ready to fire from 30 to 40 shots a minute. In default of receptacles

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prepared in advance, the turrets may be placed against the interior talus of the parapet. The cupola is proof against balls and fragments of shells, but not against direct shot; yet, since it offers to the enemy's artillery a target of but limited dimensions, it runs little risk of being struck directly. It is estimated, moreover, that it would suffice to give the steel cupola, 'T', a thickness of $1\frac{1}{4}$ inches, and the forged iron ring, A, 2 inches in order to have the armor resist the action of campaign shells perfectly.

The weight of the turret, inclusive of the gun, is 3,300 lb., for the $1\frac{1}{2}$ inch caliber and 4,400 for the 2 inch. As the vehicles weigh respectively 1,188 and 1,520 lb., the total weights to be considered are 4,488 and 5,920 lb.

It will be understood that the putting in battery of a campaign turret requires the combined efforts of quite a large number of men, and that the performance of this operation takes a certain amount of time. Apropos of this, it is well to observe that it is possible, in case of need, to work the turret without dismounting it from its carriage.

The German General Von Sauer, in accord with Majors Schumann and Scheibert, estimates that the use of campaign turrets may, in certain cases, exert a decisive action upon the operations of war. The Germans think that it is expedient to have recourse to the use of these "movable protected gun carriages," as they call them, for improvising centres of resistance designed to serve as supporting points for bodies of troops in action; and that, too, not only upon a field of battle properly so called, but also in the zone of the defensive positions of a strong hold.

In this order of ideas they are making studies of turrets capable of receiving rapid fire guns of a calibre greater than that of those put in service up to the present, and have already submitted to experiment a type of protective armour for a $2\frac{1}{4}$ inch gun.

(*Scientific American*, December 15th 1894).

A Field Printing Press.—A travelling field printing press has been constructed for the use of the Head-quarter Staff with a German army in the field. The complete equipment is packed in 4 two-horsed specially constructed waggons; two of these contain the type, &c., the third a hand-printing press, and the fourth the office furniture. In size and colour these carts are similar to those of the baggage train but in order to distinguish them they have "Head-quarter Staff, Field Press" painted on them.

(*Revue du Cercle Militaire*, 26th January 1895.)

New repeating pistol.—The firm of Ludwig Löwe & Co., is turning out a new repeating pistol. Borchardt's patent. Eight cartridges are carried in the magazine, the bore is 7.65 millimetres and the range is stated to be 500 metres.

(*R. U. S. I. Journal*, February 1895.)

An improvement on the War Game.—The Austrian press notes that considerable improvements are contemplated in the "Kriegspiel" as played in Vienna. In view of the importance of a well organised supply

system in fortress warfare, commissariat and railway transport officers will in future be present when the war game is played in order to decide or give advice on matters concerning their respective branches of the service.

(Revue du Cercle Militaire, 15th February 1895.)

German Imperial Military manœuvres. Programme for 1895.—The Imperial manœuvres of 1895 will take place in the neighbourhood of Hambourg and will consist of operations both by sea and land, such vessels of the German Navy as may be available from the German Baltic and North Sea fleets taking part.

The operations will be on a larger scale than any hitherto undertaken and will have for their main object the testing of the practical war value of the canal lately opened between the two seas. The land manœuvres will be confined to the triangle and coasts enclosed by Kiel-Fleusbourg-Hambourg and Cuxhaven.

(Revue du Cercle Militaire, 16th March 1895.)

The American Rifle.—The American Krag-Jorgensen service rifle does not appear to be giving satisfaction; its faults are that it is with its bayonet fixed half a pound heavier than the arm which it supplants; the bayonet cannot be fixed unless cleaning rod is well screwed home; the component parts are said to be clumsy and heavier than is necessary; above 650 yards its accuracy is doubtful; the backsight is defective and the foresight is so small as to make quick aiming a matter of difficulty; and the backsight has no smaller divisions than 100 yards.

(Revue du Cercle Militaire, 30th March 1895.)

Use of Electric lights for signalling purposes in war.—"L'éclairage électrique" draws attention to a new system of night signalling which is in use in the Italian Navy and is the invention of Kaselowsky. Twenty combinations of red and white lights are employed, and of these eighteen represent the usual consonants while the remaining two have no special use.

"Understood" is signalled by the letter "T" which is signalled by flashing "red-white." It is said that signalling can be carried on very rapidly by means of these lights.

(Revue du Cercle Militaire, 2nd March 1895.)

Duelling.—An order was issued to the Russian army last year which makes duelling, under certain circumstances, compulsory.

(Broad Arrow, 30th March 1895.)

Military bicycles.—A Japanese bicycle corps was raised after the commencement of the late war. It consisted of 23 bicyclists, and did good service in transmitting orders and bringing in information.

(Yokohama.)

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Geary, C. B., R. A.

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Employment of Ground Scouts, Combat Patrols, and Orderlies of Artillery; compiled by Major E. A. Lambart, R. A.

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The Military Organisation of the Turkish Empire (continued in No. for December 1894.)

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Infantry Tactics (continued 9th, 16th, 23rd & 30th December 1894.)

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Ditto 12th January 1895:—

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Ditto 12th December 1894:—

The Belgian Army.

Ditto 18th December:—

A New Shot.

Ditto 4th January 1895:—

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Ditto 6th January:

Fortress Troops.

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The author thanks the reviewer W. H. Ong.

1. The January 1997 War, by an Anglo-American

The Fort in Arroyo, by an American

Author: David C. Mervin, University of California, Los Angeles

$$P = \{b_1, \dots, b_r\} \subseteq R \text{ is } P \text{ is } A \text{ is } \{I_1, \dots, I_r\} \subseteq B$$

1. *For information only: Do not file.* (FWS 5010.1-1, 1-10-64)
 2. *For information only: May be filed.* (FWS 5010.1-1, 1-10-64)

Submitted: 10/10/2013; Accepted: 01/09/2014

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Thiers' History of the Consulate and the Empire of France under Napoleon, translated by D. Forbes Campbell and J. Stebbing. 12 Volumes, price 12s. each (Chatto and Windus.)

The Life of Lieut.-General Sir Evelyn Wood, by Charles Williams, price 14s. (Sampson, Low and Co.)

Questions and answers on the Maxim Gun, by Captain H. T. Lukin, price 6d. (Gale and Polden.)

The Story of the Civil War: a Concise Account of the War in the United States of America between 1861 and 1865, with maps and plans. Part I. To the opening of the campaigns of 1862, by J. C. Ropes, price 6s. (Putnam and Co.)

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History of the Campaign for the conquest of Canada in 1776 by C. H. Jones. Price 3s. 6d.

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Manceuvre du service de santé de l'avant dans la Prochaine Guerre, by E. Gavoy. Price 2s. 6d. (Paris, Ch. Lavanzelle.)

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Grands Artilleurs: Dronot, Senarmont, Eblé; by Captain Girod de l'ain. Price 8 francs, (Berger-Levrault, Paris.)

Cours de Fortification Passagère: Part II., by V. Deguise of the Belgian Engineers, (P. Weissenbrulk, Brussels.)

Le General de Laveaucoupet. Cinquante ans de vie militaire, by J. de la Faye. Price 4 francs, (Paris, Blond et Barral.)

Un aide de camp de Napoléon. La campagne de Russie, by General Corute de Ségur. Price 3 francs 50, (Paris, Firmin Didot.)

Considerations techniques sur les transformations de l'armement moderne et sur son emploi dans le combat, by Lieut-Colonel G. Conara, translated by Lieutenant M. Manrel. Price 2 francs 50, (Paris, Lavanzelle.)

Sanitation and Health, by Colonel R. C. Hart, v. c., and Brigade Surgeon-Lieut.-Colonel T. H. Hendley, c. i. e. Price 1*s.* 6*d.*, (W. Clowes and Son, London.)

La Défense des côtes d'Europe, by Carl Didelot. Price 25 francs, (Paris, Berger-Levrault 1894.)

L'armée de l'est, relation anecdotique de la campagne de 1870-71, by Grenest. Price 12 francs (Paris, Garnier frères)

De l'attaque et de la défense des positions d'arrêt, by J. Sandier, (Paris, Berger-Levrault.)

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Recollections of a military life, by General Sir J. Adye, G. C. B., R. A., Price 14*s.*, (Smith, Elder and Co.)

Lucknow and Oude in the Mutiny, by Lieut-General McLeod Innes, R. E., v. c., Price 12*s.* (Messrs. Innes and Co.)

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Mes Souvenirs, Vol. II., by General du Barail. Price 7 francs 50, (Paris, E. Plon, Nourrit.)

Les Souvenirs du Général Baron Paulin (1782—1876.) Published by Captain Paulin-Ruelle. Price 4 francs, (Paris, Plon, Nourrit.)

Memories du Général Godart 1792—1815, published by J. B. Antoine. Price 6 francs, (Paris, Flammarion.)

La Prise de Bône et Bougie, by General Cornulier-Lucinière. Price 3 francs 50, (Paris, Lethielleux.)

La Campagne de 1812, by G. Bertin. (Paris, Flammarion.)

Puissance Militaire des états de l'Europe, by Captain J. Molard. price 4 francs, (Paris, Plon, Nourrit.)

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NOTICE.

Colonel M. J. King-Harman, Deputy Secretary, Government of India, has generously offered to give Rs. 500 towards the cost of a new building for the United Service Institution of India, if ten other members in Simla will each give a similar amount.

The Council take this opportunity of stating that donations (additional to those mentioned above) from members, whether residents or non-residents of Simla, for this most desirable object will be thankfully received, as the Institution funds are quite inadequate for the purpose, and a large sum will have to be raised to carry out the proposal.

By order,

A. A. J. JOHNSTONE, CAPTAIN,

Acting Secretary, U. S. I. of India.

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The Journal
OF THE
United Service Institution of India.

VOL. XXIV.

1895.

No. 121.

A GERMAN VIEW OF THE COSSACK "LAVA",

*Translated from the "Russki Invalid" by Lieutenant R. G. BURTON,
1st Infantry, Hyderabad Contingent.*

In view of the articles which have lately appeared in the Journal of the U. S. Institution the following remarks, translated from the "Russki Invalid" of the 21st April 1894, may be of some interest.

The "Russki Invalid" says:—

Two years ago the articles of M. Mitkevich on the Cossack Lava appeared in the "Military Magazine," and attracted general attention in military circles. In these articles was explained the point of view from which we must regard our Cossack cavalry, and attention was drawn to the incorrectness of the opinion that the Cossacks are a bad imitation of the regular cavalry. On the foundation of historical data and logical deductions the author arrived at the conclusion that the Cossacks should be regarded as natural cavalry, having their own history, traditions, original military organisation, and a whole array of moral and material data which demand a special system of engaging the adversary, quite distinct from that adopted by regular cavalry. According to this the fighting system of the Cossacks leads to their traditional Lava which presents an incarnation in a national Russian form of the idea of the tactics of the Mongol Tartar horse. Such a presentation of the question of the Cossack Lava produced a deep impression not only among us in Russia but in other countries. In Germany, Austria and France, the military press considered the question, attempting to explain the importance of Cossack tactics in the future rôle of Cossacks in war. Some lengthy articles from the pen of the well known German military writer, Von Dregalski, appeared in the "Neue Militärische Blätter" and we now propose to acquaint our readers with the opinions of the author.

From the appearance of Mitkevich's articles up to the present time his opinions have been contested only by M. Markoff, author of the well known "History of Cavalry," who expressed the opinion that the Lava can have no military importance, unless the mounting of the Cossacks be improved, and that a good horse is the principal, if not natural condition of success in the fighting operations of cavalry. M. Mitkevich replied to this, that, although good horses are of great importance for cavalry, the principal factor in war is always man and his action.

On the ground of this literary discussion Dregalski has also written his articles, taking his stand unconditionally on the side of the defender of Cossack tactics.

"For the attentive reader," writes Von Dregalski, "further explanations are scarcely necessary in order to acknowledge that M. Markoff arrives at incorrect conclusions. For this reason that M. Mitkevich (like M. Markoff) confesses that the mounting of the Cossacks is not good, and not equal to the requirements of regular cavalry, he would wish to preserve or rather return to the Cossacks the form of action which would make up for these defects compared with regular cavalry, and would give them the opportunity of gaining the advantage from their superiority in single combat." "The worse the Cossack horses are," says Mitkevich, "the more apparent is the necessity for the Cossacks to adopt the Lava against regular cavalry."

Omitting further repetition by Dregalski of the arguments of Mitkevich in favour of the Lava, we will go straight to the opinion of the German author as to the importance of that formation.

"Such is the difference of opinion," says Dregalski, "between the opposer and the defender of the Lava, which we have detailed because it has for the western neighbours of Russia not merely a theoretical, but a real importance, and, taking into consideration the peculiarity of Russian conditions, we must unconditionally stand in the camp of the defenders of the Lava. We consider the use of the Cossacks in this manner in a future war between Russia and her neighbours the more dangerous for the latter, because the Russian Empire has at its disposal, besides all its innumerable Cossacks, an effective cavalry, trained in accordance with new requirements. Whatever may be thought of the future conduct of the Cossacks, who now take part in warlike operations from the very commencement, they form a most important support to the regular cavalry, which fact more than all makes us reflect, that we have nothing of the kind with which to oppose them. Our splendid cavalry need perhaps not fear the Russian dragoons, notwithstanding their possible superiority in numbers. It would not be less astonishing if our splendid horses and riders armed with lances could not hold their own against a considerably superior force of Cossack, if these latter were to act in close order.

"We would even desire the latter, because this is a question of quality and the balance is in our favour. But if we consider ourselves as acting against an equal number of Russian regular cavalry, for instance against a division in which besides 18 squadrons of dragoons there are six, and perhaps more, Cossack sotnias, then success would seem doubtful for us. The Cossacks, acting in Lava formation and assisted by their firearms, could cause serious loss to their adversaries accustomed only to close formation, and taking advantage of the ground, could cause considerable disorder before the regulars could undertake anything. Success could scarcely be expected from attacking the Lava with separate units in close order, the blows would be delivered into space, and the adversary would soon appear in another place. On the other hand, the close order formations of the adversary would in such cases obtain some success. The use against the harassing Cossacks of scattered attacks of separate troops or even whole squadrons presents only a temporary method of improving the position. Fire with case shot would be useful, but the adversary also has like weapons, and the Cossack artillery, as is well known, is excellent. The Cossacks could carry on this game longer, in view of the ignorance of our cavalry as to Asiatic methods of action and single combat, notwithstanding our undoubtedly better horses. Besides this the adversary would have increased chances of success with his regular cavalry. The latter would be the better able to choose favourable moments, and, under cover of the Cossacks, would be in less danger in case of an unsuccessful attack.

"Thus if the Lava form of attack is given a broad adaptation in this manner, there will be nothing for it but to teach our cavalry to fight in open order and fire from horseback. Improvisations at the last moment would be of no avail. The brilliant French cavalry attempted this in the retreat of 1812 in fighting with the Cossacks, who were aided, it is true, by the unfavourable condition of their adversaries as regarded supplies, and the cold weather. But on the other hand it is clear that if the Cossacks, who were then collected in large numbers, had performed their duty thoroughly, not a single soldier of the French army would have recrossed the frontier. The question remains open: do the Cossacks know how to do more now? However it is always well not to despise one's enemy.

"Such, founded on a careful study of the question, is our opinion of the Cossack Lava, which is still in embryo, but may have a great future. It would be most desirable if, in order to develop these thoughts, some competent authorities would state their ideas, and point out some means of action against the Lava. People have often inquired in what way is the action of Russian cavalry distinguished from that of ours? The only peculiarity consists in the effectiveness of the Cossacks and in their original action."

From this opinion of one of the prominent German writers the reader can see the great importance which is attached to the action of the Cossack Lava. Whoever has studied German military literature can easily be convinced of the self confidence with which it treats of future collisions in war. This same Von Dregalski last year wrote that one Prussian squadron could easily drive from the field of battle 3 or 4 Cossack sotnias in close order. When the question of the Lava is raised we see the great perplexity of the same author, apparently realizing the difficult position in which the splendid Prussian cavalry would find itself in case of an encounter with Cossacks acting in the Lava formation. In close order, where the quality of the horse is the first essential, the Cossack would generally speaking, not show to advantage. On the other hand, in the Lava, where the man is the primary element of success, Cossacks would have every opportunity of displaying their inimitable fighting qualities.

CONVOY ESCORT DUTIES IN MOUNTAIN WARFARE.

By MAJOR A. W. RADCLIFFE, 14TH SIKHS.

It has often struck me as strange that no mention is made in the Infantry Drill of the important duties connected with the escort of convoys on active service. I propose to offer, in the shape of a few notes, my own humble ideas as to the different rules that should be observed by officers and men when employed in the important duty of escorting convoys through an enemy's country. These ideas have occurred to me as the result of the experiences learnt in the recent Mahsud-Waziri expedition.

I propose to treat, first, of an escort to convoys in a "Close or hilly country"; secondly, of an escort to convoys in an "Open country."

Convoy escort duties in The chief duties of the escort are :
a hilly country and defiles.

(1) To protect the convoy from attack.

(2) To take care of baggage, ammunition, prisoners, &c.

With regard to the first duty, the escort must be distributed in such a manner as will achieve the object in view. Let me assume, for example, that I have been placed in command of my regiment consisting of, say, 600 rifles, and that I have been ordered to escort a convoy consisting of 2000 camels carrying tents, baggage, &c. and of 100 mules carrying ammunition. I would tell off the escort as follows :

Advance Guard ...	150 Rifles or $\frac{1}{4}$ th total strength.
Centre Guard ...	200 Rifles or $\frac{1}{3}$ rd " "
Baggage Guard ...	200 Rifles or $\frac{1}{3}$ rd " "
Rear Guard ...	50 Rifles or $\frac{1}{12}$ th " "
Total 600.	

THE ESCORT WOULD MARCH THUS

[]Advance Guard.....150 rifles.

Baggage guard
Camels, Mules
Baggage guard

.....100 rifles.

[]Centre Guard.....200 rifles.

[]

Baggage Guard
Camels
Baggage Guard

.....100 rifles.

[]

.....Rear Guard.....50 rifles.

I would place the men on baggage guard at intervals of a few paces and I would divide my convoy so as to have half the camels in front and half behind the centre guard. The mules I would place in front, so as not to be kept back by the slower moving camels. One senior British officer I would place in command of the advance and another in command of the rear guard, and remain myself in command of the centre guard.

Assuming that the convoy has to proceed through hilly country, I should instruct the officer commanding the advance guard to detach small parties of men (about 4 men with a N. C. O.) on either flank to the hills. These parties to be sent to the highest parts of the hills previously pointed out to them by the officer and to remain in position until the rear guard is in sight. As the rear guard approached, they would join it and so help to increase the strength of the former. The duties of these small parties or groups would be to watch the enemy and to hold their ground at all costs, until help could be sent to them. I should leave it to the officer in command of the advance guard to use his own discretion as to the number of men to be utilized in this duty, and trust to him to select the best positions to be so occupied.

As the convoy advanced, the rear guard by this method would become stronger, and this is most important, as in Asiatic warfare it is almost always on the rear guard that the enemy directs his attacks. The parties of men, or groups, should exercise the greatest vigilance and take care not to descend the heights until the convoy has safely passed and the rear guard is near at hand. If they do their work properly, it would be quite impossible for any enemy to "snipe" at the convoy as he would be held in check by these groups scattered along the hills, on either flank.

I would myself proceed in command with the centre guard.

Centre Guard. In the event of a sudden attack, assistance could be sent to any part, either to the front or rear. Prisoners should be with this guard and necessary precautions taken to prevent their escape.

The duties of the baggage guard would be, chiefly, to look after the camels and their loads. In the event of the convoy being attacked, I would instruct the men to form groups of 4 men and to hold their ground at all costs. The men employed on this guard I would hold responsible for keeping the camels well together, and instruct them to march their camels as close together as possible and with a broad front. I should instruct the officer in command of the men told off for baggage guard to send to the centre guard for help

when required, either to ward off an attack or to help to make bad parts of the road passable for camels.

The duties of the rear guard are most important. I would detail a senior officer to take command, and point out to him that his chief duty is, if necessary, to fight and to hold his ground. As the convoy advanced, the rear guard would be gradually increased by the groups employed in guarding the hills on the flanks joining it. The rear guard would bring into camp all the camels that lagged behind, and all wounded men.

The duties of the convoy escort in an open country would be the same as that in a hilly country except that it would be unnecessary to have such a strong advance guard. I should increase the strength of my rear guard to $\frac{1}{4}$ total strength or 150 men, and reduce the strength of the advance guard to $\frac{1}{12}$ th or 50 men. I would point out to the officer commanding the advance guard that he should search all likely places for ambuscades, &c., in *nullahs*. The remainder of the escort I would detail as for an escort in a hilly country, but I would insist on the camels marching well packed and with as broad a front as possible. When necessary, the advance guard could be strengthened from the centre guard as circumstances required.

Duties of the convoy escort
in an open country.

REGULATIONS FOR THE TRAINING OF THE RUSSIAN CAVALRY IN SWIMMING.

TRANSLATED BY CAPTAIN P. HOLLAND, 5TH PUNJAB INFANTRY.

General Explanation.

The practice of cavalry in swimming has to be so arranged that, annually, complete bodies of troops are trained so as to be able to cross big streams (as for example the Wechsel).

2. The complete course of instruction is divided into two parts:

(a) The individual training of men and horses.

(b) The training of complete units.

3. The instruction has to be carried out strictly in conformation to the above arrangement because nothing that has not been thoroughly mastered in the first part of the course, can be made up for in the second.

4. The more suitable seasons for practice are in the months of May, June and July, being the time when squadrons and regiments are concentrated, and also when green fodder is obtainable.

During this time at least 25 exercises have to be undertaken; 15 to 20 in the first, and 5 to 10 in the second part of the course. As the number of exercises depends on local and climatic conditions, only the minimum is given below.

PART I.

The individual training of men and horses.

1. The great thing to be aimed at in this part of the training, is to train every man and horse, as far as practicable, to be able to cross a stretch of water at least 80 to 100 yards wide; firstly without arms, equipment or accoutrements, and secondly with the horses unsaddled.

2. Men, who in the course of this first part fail to learn to swim, are not allowed to take part in further instruction but must go on learning to swim separate from the rest.

Neglect of this rule would not only hinder the progress of instruction but would cause accidents.

3. The men of the squadron or troop (*sotnia*) have to be divided into 3 classes:—

(a) those who are sufficiently adept swimmers to serve as instructors,

(b) bad swimmers, and

(c) those absolutely ignorant of swimming.

Over these are nominated certain men to supervise, and by their training raise them from a lower to a higher class.

The same system is carried out as regards the horses.

By this means it is possible to observe the training of the troops at the same time as the result of the practices.

4. Exercises in the first part are not to last longer than 10 to 30 minutes with a temperature of air and water of not less than 14° R.

5. The places for practice must satisfy the following conditions:—

- (a) clean running or spring water,
- (b) calm water at landing and starting places,
- (c) an even bottom devoid of weeds, and
- (d) in the case of rivers the stream must not be rapid.

6. For safety's sake during the practice, each squadron or troop has 3 or 4 life lines (made out of plaited straw) and one or two boats or rafts, ready at hand.

7. Commanders are given a perfectly free hand in the matter of their method of instruction, as this is absolutely a matter of practice.

The use of all such contrivances as skins, bundles of straw, laths, etc., is entirely forbidden. For the instruction to be successful, it must be impressed upon the men at the commencement of the course that they must be entirely dependent upon their own muscular strength, presence of mind, and specially upon keeping the surface of the water undisturbed.

The most practical method of teaching men to swim is as follows:—

The pupil is placed in the water with a belt (the broader the better) attached to his body. To this belt is fastened a rope, the other end of which is held by the instructor. The latter stands on a stage (or raft) of which one end stands something over a man's height out of water. Every now and then the rope is slackened, thus compelling the pupil to support himself by his own exertions in the water.

8. Horses that do not enter deep water willingly must be pulled after a boat, the men holding the halter a horse's breadth distant from the animal's head. The same operation is carried out with horses that cannot swim (there are not more than one or two such in a squadron), *i. e.*, they are led into the water by degrees by the halter and are either pulled after a boat or from the stage before mentioned. To accustom them, it will be found a good thing to feed them after each exercise.

9. Men, who have learnt to support themselves in the water, are of course made to swim gradually increasing distances until the above mentioned standard is reached.

Horses that can swim should be made to cross to the opposite bank of the stream as often as possible.

Note. Horses suffering from broken wind would not come up to the required standard, and are therefore not allowed to go through this course.

10. When the horses are being trained, strict order and silence should be observed, and it is the duty of all superior officers present, from the lance corporal to the squadron commander, to enforce this.

11. Officers who cannot swim must receive instruction from their comrades until they become good swimmers.

12. To increase the men's zeal it will be found advisable to arrange swimming races for prizes.

13. As soon as the men are thoroughly accustomed to the water and have learnt to swim distances of the required standard, their training as regards Part I may be considered complete.

PART II.

Combined training of men and horses to swim in complete units.

1. The object to be achieved in the 2nd and final portion of the course is to make the training complete ; as already observed, it consists in practically training units to cross big streams 2-300 yards broad, with their full equipment.

2. To accomplish this end, it is necessary to teach the men

(a) to swim, leading their horses,

(b) by gradually increasing the distance, to be able finally to swim across distances of the required standard without superfluous waste of time or energy,

(c) where circumstances permit, to make practical use of any material available for constructing contrivances for the rapid transport of their arms and equipment, etc.

3. The chief things required in the management of horses are gentleness and self reliance, which however can only be attained if the soldier is such an expert swimmer as to turn his attention more to the control over his animal than to his own personal safety. This again points to the great importance of individual training, and argues that the 2nd part of the course should only be proceeded with when the men have reached the standard laid down in the 1st part.

The best method of training horses to swim is as follows :—

Before the horse begins to swim, the rider twists the mane round the fingers of his right (left) hand at a distance of two hands from the animal's withers (as in mounting), goes in advance of the horse down stream into the water and then swims so that with his left (right) hand he can gently pull the rein at the right moment. Jerking at the reins and wrenching at or striking the

horses' mouths are strictly forbidden, otherwise they would get so excited as to become absolutely unmanageable.

4. At the preliminary practices, the men have to turn out, without arms, the horses with bridoons attached and clothing on.

On arrival at the place where the training is to be carried out, the squadron is halted, formed in column or line according to circumstances. Clothing is removed and the bridoon rein is fastened to the mane so as not to fall over the horses' heads and get entangled in their feet. The men then remount and ride into the water.

5. The most convenient formation for cavalry, when swimming in complete units, is open * columns of 3, and in order to avoid

accidents, on entering the water, intervals of at least 12 paces are to be kept between the horses, and a distance of at least 9 paces between files. When the horses are so far in the water that their backs are covered, the men swing themselves off on the *lower* side and swim alongside, as directed above (para 3).

6. As soon as the further bank is reached, that is to say the horses touch bottom, the men remount, untying and taking up the reins again.

7. For horses that refuse to be led in the required direction, the method described in para 8 (individual training) should be adopted.

8. If space is very limited, horses and men may be sent over several times. Short rests (5 to 10 minutes) are allowed and the number of passages is gradually increased.

9. If in spite of preliminary individual training, horses enter the water unwillingly, the following practical method is to be adopted:—the good swimmers (horses and men) are placed as leaders at the head of the column, the bad swimmers either taking 2nd place in the middle of the column or being left behind in rear.

10. To avoid danger during practice, the same precautions should be taken as in the individual training, but the boats should be kept down stream at a distance of some 30 paces from, and

Note. The rider may also swim above the horse but it will be found to the disadvantage of the latter, for if the horse is a good swimmer (i.e., his back is only a little out of water or on a level with it) and the rider bad, he may be dragged under his horse. Besides, this method will be found to tire the horses.

The system of holding on to the horse's tail and guiding him by turning it the right or left like a rudder is frequently practised by the Cossacks but, having regard to safety, is not worth undertaking. For, if the horse is a bad swimmer (i.e., moves heavily and deep in the water), the rider, especially if he is a bad swimmer, runs the risk of swallowing a great deal of water, in consequence of the waves thus produced, or of being kicked by the horse.

By this process the horses are caused much less fatigue but owing to the disadvantages already enumerated, it should only be attempted by good swimmers, both horses and men, and should be avoided by all others.

parallel to the direction in which a unit is crossing. The boats will be kept in position by men rowing, but, to avoid needlessly tiring the men, if the passage lasts long and the current is considerable, the boats may be anchored by means of a heavy stone (or other weight) tied to a rope and then thrown into the water. At the other end of the rope a float is attached (either a stick or bundle of straw or reeds). Should assistance be required quickly, rope and float are thrown overboard and oars are plied. The rope and float can be easily attached afterwards when boats are not available. In small and sluggish streams, rafts may be substituted or a rope may be stretched from one bank to the other, with a float in the centre to prevent its sinking too deep. The rapidity of the current must be taken into account when stretching the rope, otherwise horses might get entangled in it. The distance from the crossing should not be less than 30 paces. When streams are to be crossed by large bodies (regiments, brigades, or divisions), doctors and veterinary surgeons are to be present.

11. At the commencement of the 2nd part of the course or at least during regimental training, bodies of troops should practise crossing streams with arms, equipment, accoutrements and baggage.

12. Only means of transport actually available on the spot are to be used, for, in war time, carriage of the requisite material would be an impossibility.

13. Boats and rafts made out of casks are recommended for transporting baggage, as possessing great bearing capacity, lightness and speed. Of the rafts to be made out of available materials, the large ones (of 2 or more parts) to be made out of beams are preferred, because the small ones considering their strength and the time spent in making them scarcely meet requirements, and also because, if small rafts are tied on to the horses' tails, the animals get very exhausted, and with a crowd of swimmers accidents so very easily happen.

14. In the above mentioned practices the men turn out fully armed and accoutred, the horses saddled and with regulation equipment.

15. Before marching off to the practice ground the requisite number of men is sent on ahead under an officer or under-officer, either to prepare material necessary for the construction of rafts or to collect any available transport (such as boats, ferries, etc.) at the crossing point.

16. If a whole regiment (brigade or division) is to cross, a cavalry sapper-commandant is sent on to the rendezvous.

Note. The most practical types of rafts are described in the supplement to these instructions.

The men with him must be both thoroughly good swimmers and experts in the construction of rafts.

17. On arrival at the crossing point, the column is halted (in column or line), the bit reins are taken off and the horses unsaddled. The men then take off their arms and accoutrements, and carry everything to the place where the rafts are ready.

18. In order to prevent things getting mixed up during the passage, every cavalryman has to pack up his equipment, arms, accoutrements and the small parts of his horse's furniture, in the *numnah** which is wrapped round them, the whole being tied together by the

* Schweissdecke.

surcingle (see Fig. I).

19. The men then remount and ride into the water, opened to column of three, having tied up the reins as laid down in para 4 above.

20. At this juncture the preparation of transport should be complete, and the things belonging to the foremost units are first taken across.

21. Boats must cross 30 to 40 paces away from the troops, down stream, so that the noise of the oars may not frighten the horses.

22. The cavalry sapper-commandants, as also the men of the squadrons that carried over the equipment, etc., follow in rear of their own troops (squadron or regiment). Their horses can either swim with the last unit, tied to a rope behind the boats, or be driven over "en masse."

23. On reaching the opposite bank, the men at once pick out their own equipment, saddle their horses and form up, without waiting for the arrival of the remainder.

SUPPLEMENT NO. I.

Crossing "en masse."

1. By crossing "en masse," the passage is accomplished nearly twice as quickly and the horses certainly suffer less exhaustion. Only one system should however be adopted in broad and rapid streams, where means are available to transport the men who would not perhaps be able to swim such a long distance without their horses.

2. Before the crossing is commenced, a party of men must be sent across to catch the horses as they reach the opposite bank. This party must be extended in a chain fronting the mass of swimming horses.

3. If the stream is broad and rapid and means are available to transport the equipment, etc., the horses are driven into the water. To induce them to go, one or two leaders precede the mass (good swimmers, both men and horses) to show them across.

4. All horses must be unsaddled, the bit reins removed and the bridoon rein tied to the mane. It will be found very useful to fasten a rope on to the horses' necks, so as to be able to hobble them on the other side.

5. The men load their things on the boats, ferries, or rafts, and cross if possible at the same time as the horses.

6. In rivers of inconsiderable breadth, the following procedure is adopted :

A raft as big as possible or a ferry boat is constructed. To the diagonally opposite corners of it (see Fig 2) are fastened two ropes, the length of which will depend on the breadth of the streams. One of these is stretched to the opposite bank.

To effect this a float is fastened to the end of the rope and is carried up stream as far as the rope will go. A good swimmer then swims across pushing the float in front of him to the opposite bank where he makes fast the end of the rope. The raft is then pulled from one bank to the other as required.

7. In the total absence of transport, the passage can be effected in the following manner :—The horses are not unsaddled, but only have their girths loosened, bit reins removed and the stirrups thrown over the saddle. They are then driven over "en masse" (see above paras 3 and 4).

The men are taken across by a rope pulled across from the other side *upstream*, the end being firmly fastened to pickets driven into the ground. In three or four places in the middle of the rope floats are attached (see Part II, para 10).

As soon as this is done, the men undress, tie up their equipment, arms and accoutrements, fasten them on their backs and cross one by one holding on to the rope. This process is however noted as being tedious.

SUPPLEMENT II.

Types of rafts and ferry boats that may be constructed out of available material.

I. Ferries built on boats (*Fig. 3*) are the most practical means of transport for baggage, as they have the advantage of great strength and bearing capacity, are easily carried, and quickly put together.

To construct this kind of ferry boat, two fishing boats are tied together at bow and stern by a foraging rope. Athwart the boats, baulks are placed (2 per boat) with notches made in them for the side beams. To these baulks strong laths* of the same length as the boat are lashed in the same manner. To the latter are lashed 3 cross beams cut in half, and on these the deck (consisting of 10 planks)

* Boardwände,

is laid, and is fastened by beams of poles lashed on to the cross beams.

The breadth of this boat is about 10,' length 11,' and the bearing capacity is computed at 115 Poods (=16'38 kg, about 4140lbs. or 37 cwt). With materials close at hand it can be constructed by 10 men in $\frac{1}{2}$ hour and can be pulled across, by a rope fastened to the opposite banks, by one man.

With smaller boats the construction is still simpler. They are tied together as above. Athwart the side beams stout poles are placed, and on these the deck is laid consisting of doors, shutters, etc., etc., With a length of 10' and breadth 9,' the bearing capacity amounts from 90-95 poods (about 30 cwt.). It can be made by 10 men in 15 minutes (Fig. 4).

Large rafts made out of beams are the most practical, both on account of their strength and the simplicity of their construction.

Their disadvantage is their difficulty of management with oars, for which reason, they are usually pulled across by ropes (see Supplement I. para 6.)

Examples.

- (a). To construct a raft, nine 6 inch beams are taken

* 1Klafter = 1'134 m.

each 2° (7' 6") long,*

(the breadth of the

raft is taken at about 11° (5' 8"). The beams are fastened one under the other by poles 2° (7' 6") long. Equidistant from the centre and athwart the beams are laid 2 joists (made out of thick posts) on which the deck rests (the deck is

* Schwarten hölzern.

made of board or outside* planks) and is

fastened down by poles lashed on with ropes. All parts of the rafts are best secured by ropes or cords made out of plaited reeds which ensure both flexibility and strength. The bearing capacity of these rafts is 40 poods (about 13 cwt). They can be made by 10 men in about $\frac{3}{4}$ hour.

- (b). Rafts made out of boards (Fig 6.) consist of 12 pieces of 2 inch half planks on which 2 cross pieces of double boards are placed edgeways. These serve as a support, or foundation, for 20 more boards of the same thickness. To increase the height the deck boards can be laid at certain distances in two rows one above the other ; with a breadth of 9' and a length of 9½' their bearing capacity comes to 35 poods (over 11 cwt). All lashings are made with ropes,

Small rafts.—The particular merit of this type lies in the fact that every man has his own outfit with him. They are however not strong, take much material and a long time to make, and exhaust the horses.

Example (Fig. 7).

Three fascines are made of reeds or straw (straw is better if not cut but plucked from the roots), each 3' long and 1' diameter, and are lashed together. Above the fascines, 2 sticks are fastened at a distance of 2' from one another. Underneath, a pole or pike is stuck through diagonally, and at one end is fastened a foraging rope which is tied to the horse's tail.

Directly the horse, on approaching the far bank, stops swimming, the raft must be unfastened and pulled on by hand.

From the description of this type of raft, it is obvious that it is only suitable for inconsiderable streams, and for small units (flying patrols) or single horsemen.

Rafts made on skins (or leather bags) possess considerable bearing capacity. A large quantity of skins cannot however be carried by cavalry,—which is after all a most important consideration,—they are only in the rarest instances to be found on the spot, and they must first of all be placed in a solution of alum and salt. During the winter they should be repeatedly smeared with a mixture of tallow and tar (in the proportion of 3 parts to 1). To make a raft out of skins, a frame is built and strengthened by poles laid diagonally across it. On to these frames the skins are fastened, the raft is launched and the deck laid.

A raft of 4 skins will bear 10 men,
 " 6 " " 20 " in which calculation are
 included 4 men to row.

TRANSPORT IN THE FIELD.

BY CAPTAIN A. WALLACE, 27TH PUNJAB INFANTRY.

It does not appear quite certain, from reading the accounts of the advance of the Chitral Relief Force, that any advantage would have been gained, had the troops on any occasion been required to move independently of, and without any transport. This much however is apparent, that on several occasions there was a great deficiency of transport, and that a delay of two or three days was made at the Lowari pass, of no consequence no doubt,—as there was then no hurry,—but caused by the path over the pass being unfit for laden animals.

In 1891, I think it was, I advocated in a number of the U. S. I. Journal of India, the practice by our troops, in peace time, during the cold weather, of short marches of 6 or 7 miles without any transport into the district for three or four days at a time, the nights being passed in bivouac. The great benefit to be derived would be the knowledge gained that transport can be dispensed with, and that such practices are expected of the men in the ordinary course of their duty.

I do not know on what occasions troops of the Indian Army, however small the party, have moved without transport, but I can instance at least two occasions when detachments of the Kashmir Imperial Service troops have done so. Towards the end of 1892, a half company, about 50 strong, marched from Bunji to the support of Mr. Robertson in the neighbourhood of Chilas, a three days march, carrying their rations, great coats, blankets, and, I think, 100 rounds of Snider ammunition. A few days later, a subadar of the same regiment followed in the same way and completed the re-opening of the line of communications with Chilas. I do not see why our men should not, in cold weather, carry on their backs for short marches not only the great coat and a couple of blankets, but everything else they require, in fact their service kits. To begin with, the practice might be ordered to be carried out with blankets and great coat only; the cooking pots and rations together with extra ammunition being at the same time carried in the haversacks. A valise, or knapsack, for a man's complete kit might be adopted later on, and eventually replace the rather unsatisfactory braces now in use in the Native Infantry.

British officers have their horses to carry a certain amount of kit. They would learn that it is easy to dispense, at a push, for a week or ten days, with nearly every single thing that is now considered indispensable, and that for food they can trust to the resources of the country and to Providence. I think the old tradition, that a good campaigner makes himself as comfortable as possible as long as he can, is responsible for a good deal of misconception, so that now an officer, who has managed to secure a couple

of camels for his transport, is looked on as a better soldier than one who manages with half a mule. The transport arrangements of an expedition must suffer when every one is trying to outvie his neighbour in the amount of baggage he takes with him. The tradition may be correct in its application to officers alone on shooting expeditions, but, for our small frontier wars, I cannot help thinking that the officer who can live happily with the least amount of transport is the best soldier. I suppose the fact that this tradition is somewhat in the nature of a paradox, has kept it alive. It would be a good thing if the fashion changed, and the contrary opinion began to prevail. We should not then have regiments at camps of exercise, adorning their camps with numerous pots of flowers in order to be considered smart.

In the plains of India, the former seat of our wars, there is no doubt that the old system of kits being carried on transport is necessary, but, as our frontier advances, we must adapt ourselves to new circumstances, and changes in our situation. In the hills and the Punjab during the cold weather, why should we not be able to put two or three divisions into the field, with as little transport as Continental armies or, say, the Japanese would be able to mobilize with; all the more so, as presumably our troops are, ordinarily speaking, better weight-carriers than Europeans?

THE
TACTICAL AND STRATEGICAL POWER OF MOUNTED
TROOPS IN WAR.

BY MAJOR-GENERAL E. T. H. HUTTON, C. B., A. D. C. TO
THE QUEEN, COMMANDING THE NEW SOUTH WALES
MILITARY FORCES.

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Lives of great men all remind us
We may make our lives sublime,
And departing leave behind us
Footprints on the sands of Time.
—*Longfellow.*

The importance of mounted troops in war has been a somewhat varying quantity. In very ancient times the power of mounted troops, governed as it necessarily was, by the primitive arms of the men and imperfect equipment of the horses, was comparatively small. In the Middle Ages, however, the armour of the knights and the improved equipment of the horses made the chivalry of Europe an overwhelming factor in battle. Gradually, however, an improvement in the weapons of the infantry took place, and an increase in their relative power followed. Thus, in the battles of Frederick the Great the cavalry bore a proportion of one-fourth, and even one-third, to that of the whole armies engaged. Later, in the Napoleonic wars, when the improvement of infantry firearms and the introduction of the bayonet increased the effectiveness of infantry, the cavalry bore a proportion of one-eighth and one-tenth to that of the whole force. This proportion has been maintained until the present day, and, developed beyond all former precedent as infantry fire power has been in the last few years, the acknowledged proportion of cavalry to the other arms has still remained unchanged. There has even arisen a school of distinguished men, among whom may be included the present German Emperor, who affirm that, in spite of the rapidity and low trajectory of modern infantry rifle fire, the power of cavalry in the field of battle remains as great as, and even greater than, in the early days of the present century. It is incontestable that the power of mounted troops in recent wars has proved itself of as great, and even greater, effect than ever before—though

perhaps in a form less attractive, less understood, than when—

Ascending squadrons come.

Yet more ! yet more ! how far array'd
They file from out the hawthorn shade,
And sweep so gallant by ;
With all their banners bravely spread,
And all their armour flashing high.
—*Marmion*.

THE TACTICAL POWER OF MOUNTED TROOPS.

When the great area over which modern battles must extend, the vast range of fire, the accuracy and deadly nature of modern fire power, are considered, it follows that rapidity of movement and the power of covering distances at a rapid pace by the advanced bodies of troops becomes a necessity. Of what avail will slow-moving infantry scouts be when opposed to a long range and powerful artillery ? What commander will dare to develop an attack against an enemy whose presence at three miles distance, unmarked by smoke and unannounced by "cannon's deadly roar," is only revealed by the shower of bullets fired at long range, and by well-directed shrapnel fire ? It will obviously be necessary to push forward mounted men, who, by their rapid manœuvres and far-reaching flank movements, can give intelligence and compel the enemy to display his strength and make evident his position. The preliminaries, therefore, of every battle, of every skirmish, must be left to mounted troops. It should be always borne in mind that, in modern battles, infantry once committed to an attack cannot be withdrawn except by undue loss of life, and loss of some initial energy, and even of *morale*. Thus, therefore, for the primary duties of reconnoitring, scouting and covering an advance, for which all mounted troops exist, or have existed in past and recent times, their value is now even more evident than it ever was before. It is, also, a curious fact that a modern military school of thought ascribes more tactical importance than ever before to its effect upon infantry and upon artillery when shattered or shaken by the deadly character of modern fire, or when taken by surprise. It is argued, and I think with reason, that in modern battle the effect of a superior infantry or artillery fire will be so great and so demoralising, that the victims will become an easy prey to an impetuous, well-timed, charge of well-led cavalry. Personally I am inclined to this view, and so also are many, who, like myself, have taken part in recent wars in Africa and in Asia with savage tribes—tribes who, emboldened by fanaticism or a wild natural courage, have advanced in spite of shot and shell, and have reached, aye ! and have even broken British squares. This has been well com-

memorated in homely soldier's language by Rudyard Kipling :—

So 'ere's to you, Fuzzy-Wuzzy, at your 'ome in the
Soudan ;
You're a pore benighted 'eathen, but a first-class
fighting man ;
And 'ere's to you, Fuzzy-Wuzzy, with your 'aytick
'ead of 'air ;
You big, black boundin' beggar—for you broke a
British square.

Yet the moral effect of a charge of natives, no matter how brave, is small indeed compared to the stern thunder and reality of a compact, well-led charge of cavalry, preceded, as it would be, by a covering fire of artillery.

The importance, then, of mounted troops upon a modern field of battle may be accepted, and I will, with your indulgence, proceed to show how cavalry tactics may be modernised and simplified, so that, while satisfying the existing conditions of war, they may be easily applied, and may be with facility learnt by British troops from whatever branch of our race they may come.

The important elements of success must be—

- (a) Simplicity.
- (b) Rapidity.
- (c) Conformity to modern conditions of opposing fire power.

To gain these ends, the cavalry formation in double rank must, in the writer's opinion, be at once abandoned.

The last edition of British "Cavalry Drill," Part III., with an instinct of emancipation from old tradition, indicates that "movements should occasionally be practised in single rank, not only because that formation may often have to be employed on service, but also, etc."—Cavalry Drill, 1891, page 303. The paragraph is undoubtedly the precursor of the next great change in our cavalry tactics ; but, as it took nearly twenty-five years of controversy to adopt, at last, that primary condition of administrative efficiency—the "squadron system,"—so possibly it may take another ten years to similarly adopt the single-rank formation.

It is the double rank which complicates and breaks the temper and the patience of every learner of cavalry drill. It is the double rank which necessitates half the complicated manœuvres in the drill-book—movements which none but regular cavalry, trained men on trained horses, can ever hope to master with effect. It is the cavalry system of double rank which necessitates the continuance of those old-fashioned movements, long abandoned by the infantry for maintaining the relative position of the front and rear ranks.

"Cavalry," wrote the Duke of Wellington, in 1833, "is essentially an offensive arm whose use depends upon its activity, combined with its steadiness and good order. I think that the

second rank of cavalry, at the usual distance of close order, does not increase the activity of the cavalry. The rear rank of the cavalry does not strengthen the front rank, as the centre and rear ranks do the front rank of the infantry. The rear rank of the cavalry can augment the activity, or even the means of attack of the front rank, only by a movement of disorder.

. The second rank, at a distance sufficiently great to avoid being involved in the confusion of the attack of the front rank, whether successful or otherwise, could aid in the attack, or, if necessary, cover the retreat of the attacking party, and thus augment the steadiness and good order of the cavalry as a body; while, by the absence of all impediments from the closeness of the rear rank, the activity of the front rank would be increased. . .

. . . The one-rank system . . . would render the use of cavalry in an army much more general than it is at present."

"As to the rank entire system," wrote General Sir Hussey Vivian, of Waterloo fame, who afterwards became Lord Vivian, "I am by no means certain that it would not always be a good thing if, on advancing to an attack, or standing in line, the rear ranks were to form a reserve at a distance. . . . The fact is, the second rank is of but little use but to fall over the first."

Lord Anglesea shared the same views. In 1835, General Bacon of Peninsula renown, who afterwards commanded the Portuguese Cavalry, thus writes:—"In one rank all movements are made with greater precision and more regularity than in two. When cavalry has to reform after a charge it is effected more readily and far quicker. . . . I have tried this in the presence of a superior enemy very frequently, and, at times, when hotly pursued and under a heavy fire of artillery and musketry. A charge in one rank will be more rapid, and consequently more likely to succeed. . . . Everyone will do his duty; skulkers cannot so easily pull up, and such are found in all armies."

Captain Nolan, an acknowledged cavalry authority, whose short and promising career was cut short at Balaclava, advocated single rank or the rank entire system with all the fervour of an advanced and able thinker. Many of our modern cavalry authorities are equally in favour of this change, among whom may be mentioned the late distinguished Sir Herbert Stewart.

The writer would not presume for one moment to venture an opinion on the value of the single-rank system in cavalry warfare, except that his good fortune has given him exceptional experience in the training of mounted men; and he unhesitatingly affirms that, given a few good officers and true, he would undertake in a few short weeks to teach and train a mounted force of such men as Australia can with ease produce; organised in single rank, which should manœuvre quicker, more easily, and with less dislocation than a similar force in two ranks after many

months—nay, even years—of training in the riding-school system and drill in two ranks as practised upon the Long Valley at Aldershot. It is with some knowledge of the task that the writer ventures an opinion, as he has had the good fortune to raise and command mounted troops in three campaigns; and between 1888 and 1892 it further fell to his still more fortunate lot to train and command, in all, 270 officers and 3800 men improvised as mounted troops.

It is the writer's view that the secret of success in the effective training of mounted men for war lies in these two factors :

1. Manœuvre in single rank, or rank entire.
2. The squadron system—*i. e.*, the squadron divided into four divisions, and each division into permanent sections of four men, the all-important principle being that the men and horses manœuvre and fight side by side who sleep side by side in the bivouac, or are tethered side by side at the horse lines.

The last condition has been adopted during the last three years by the British cavalry, and the former will undoubtedly follow in a few years hence.

In order to illustrate the advantages and simplicity of the proposed single-rank formation, the following diagrams have been made, and it will be seen that, while the proposed system has all the advantage of depth possessed by the double rank, it has also the all-important merit of simplicity.

Diagram I. shows a regiment in line of squadron columns in single rank, by which it will be seen that each squadron column has four distinct ranks, each intact and separately commanded, yet ready to support the one in front. The intervals between squadrons may be either squadron or half-squadron interval, giving in the first case when deployed a line in single rank, and in the second two distinct lines.

Diagram II. gives a regiment in line of squadron columns in the old days of troops, as laid down in the "Cavalry Drill" 1885. It will be seen that the number of ranks is the same as in diagram I., with intervals to admit of rear troops deploying into line.

Diagram III. gives the single-rank formation, as in diagram I., deployed into half-squadron columns, which thus with its two lines becomes similar to the formation of 1885 when the squadron was deployed.

With the regiment organised as in diagram I., the three necessary conditions of modern cavalry tactics, as stated above, are, I venture to think, fulfilled, namely :—

- (a) Simplicity, by reason of the single-rank formation.
- (b) Rapidity arising from the facility which a manipulation of mounted men in single-rank gives.
- (c) Conformity to modern conditions of opposing fire power

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in that you have the old squadron system of two double ranks sufficient, as it has been proved for purposes of shock, spread over a wider and deeper area, according to the ground and the density of fire, yet each rank is intact, cohesive, and separately commanded.

In diagram IV. a regiment in line of squadron columns is shown, as laid down in the last and most recent Cavalry Drill *viz.*, 1891, which gives no less than eight ranks, or double that of diagram I. and II.

There are those who consider that this formation is altogether too dense, and that it is therefore quite unsuited to the conditions of modern fire power with its increased accuracy and long range.

The greatest stress is rightly laid in all modern works on Cavalry Tactics upon the facility of manœuvre in squadron columns, but it requires no demonstration to show that the all-important factors of rapidity and simplicity would be multiplied one hundredfold by the abandonment of the eight-rank system for that of the four.

I wish to invite close attention to one single-rank formation in particular, which enables a regiment drawn up in line of squadron columns at half-squadron deploying interval, as in diagram I., to perform with equal rapidity, cohesion, regularity and silence, every manœuvre which mounted troops in the field can be called upon to do. This formation, initiated in South Africa in 1881, has been adopted by the Mounted Infantry at home, and is carried out by the mounted troops in Australia.

It has been called, for the sake of marking its origin, "Boer formation," since the idea was first borrowed from the Boers in 1881, and is merely squadron columns advancing from a flank by divisions in column of half-sections.

In diagram V. this formation will be seen. It will admit of the most rapid manœuvre over broken and difficult ground, giving equal facility for forming to the original front in line of squadron columns, as in diagram VI., or a diagonal movement to a flank as in diagram VIII., or a change of position, as in diagram VII. A decrease or increase of front is equally simple, as shown in diagram VI.

The simplicity of drill and manœuvre which this system gives can only be realised when seen and practised.

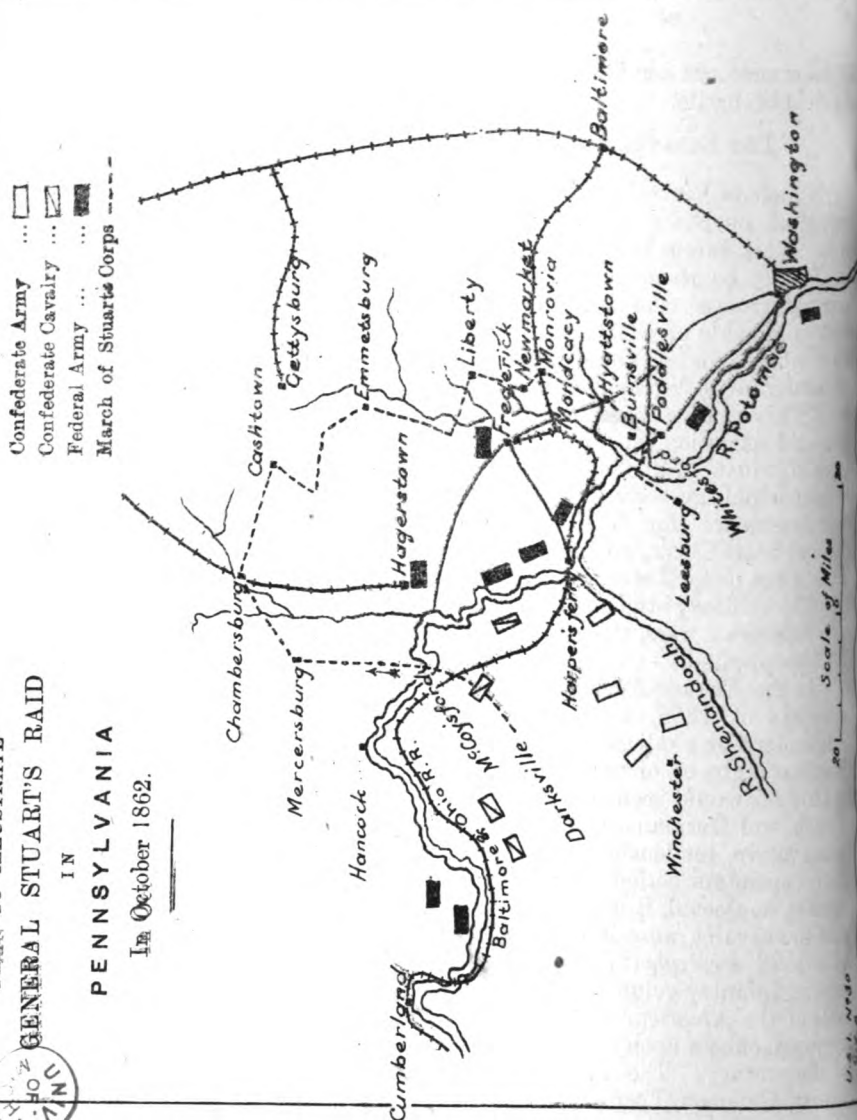
In the foregoing single-rank system, at least two of the elements of success for the tactical value of cavalry which were indicated have been proved—namely, (a) simplicity and (b) rapidity. By the last proposed, or "Boer," formation the final element of success—(c) conformity to modern conditions of opposing fire power—has been most effectually dealt with. This formation gives the minimum of front, yet with the adaptability to description of ground or physical obstacle, combined with cohesion, and the power of executing with the utmost rapidity any manœuvre necessitated

power of independent action in a manner which has not hitherto been equalled in modern times. What cavalry or mounted troops have ever executed such a feat as that of Stuart, of Confederate renown, who, leaving Darksville on 9th October 1862, and crossing the Potomac at McCoy's Ford, captured Chambersburg, and thence by a series of unparalleled marches completely circled round

PLAN TO ILLUSTRATE
GENERAL STUART'S RAID

IN
PENNSYLVANIA

In October 1862.



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by the evanescent conditions of a theatre of tactical operations or of a field of battle.

THE STRATEGICAL POWER OF MOUNTED TROOPS.

Napoleon has told us that the value of troops in war for strategical purposes is in inverse ratio to their rapidity of movement. This axiom is more especially true of mounted troops.

It may be assumed, as a corollary to such an axiom, that the mounted troops who are to take a great strategical part in war must be capable of a self-sustained and self-contained effort; in other words, that a mounted force, if it is to effect great strategical results, must be capable of acting as an independent factor in war. This is to practically assert that a mounted force capable of independent action must consist of cavalry, artillery, and infantry, to which must, in due course, be added a proportion of those corps without which no body of troops can remain efficient in the field, viz.: Engineers (for Engineer services or for field telegraphy), Medical Staff Corps, and Army Service Corps (including, as this department does, Transport and Supply).

The military student finds with no small surprise that, in recent European wars, the strategical use of mounted troops has been but little applied.

In the Franco-Austrian war of 1859, in the Austro-Prussian campaign of 1866, and in the Franco-Prussian war of 1870, the independent or strategical value of mounted troops seems to have been lost sight of, or underrated. The lesson of the American war of 1862-65 would seem to have been overlooked alike by Austrians, French, and Germans. Whether it was that, bound down by the conservative tendencies of all standing armies, the real value of the independent action of mounted troops was forgotten or intentionally neglected, it is not necessary to discuss. The fact remains that the cavalry were in each and every case, so far as their power as a *solid strategical factor* is concerned, bound down to the slow-moving infantry columns. No attempt was made to emulate those feats of the American cavalry leaders, which exercised such momentous effects upon the issue of the longest and most bloody war of the century. The reason for the success of such leaders as Stuart, Grierson, Forrest, Sheridan, and others, is not far to seek. It was that, unfettered by traditions of the past, the Americans armed their cavalry with a repeating rifle, and developed their power of independent action in a manner which has not hitherto been equalled in modern times. What cavalry or mounted troops have ever executed such a feat as that of Stuart, of Confederate renown, who, leaving Darksville on 9th October 1862, and crossing the Potomac at McCoy's Ford, captured Chambersburg, and thence by a series of unparalleled marches completely circled round

the Federal army under McClellan, severing all his lines of communication, and finally recrossed the Potomac on the 12th October at White's Ford with a loss of three men? * A distance of 145 miles was covered in 76 hours, and portion of the distance—viz., Chambersburg to Hyatt's Town, 65 miles—in 20 hours. So successful was this raid, that something near akin to a panic seized the money market at New York, and a momentary paralysis of uncertainty made itself felt throughout the whole Federal army, and there further resulted a temporary collapse of the Federal cavalry, which had wasted itself in a fruitless effort to pursue. Yet Stuart's cavalry, so little affected were they by their splendid exploit, contested the advance of the Federal infantry, when, some days subsequently, in overwhelming numbers they crossed the James.

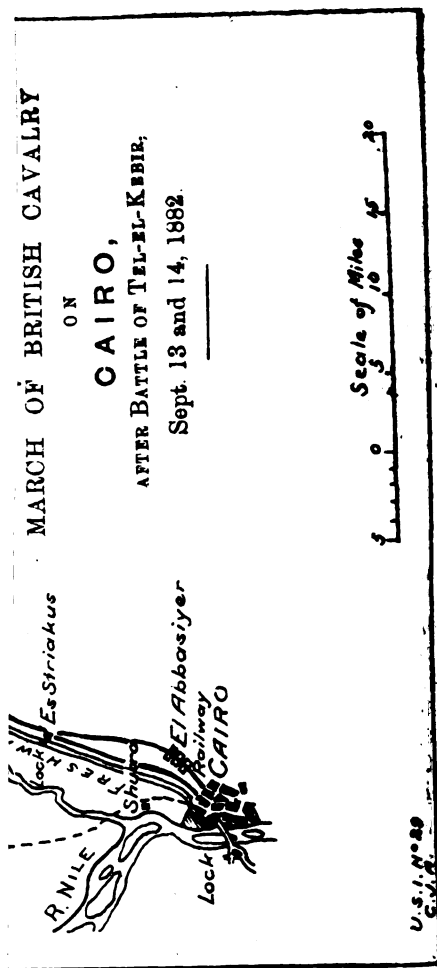
This great raid of Stuart's does not stand alone; and, if time admitted, descriptions might be given of Forrest's or of Morgan's numerous Confederate raids in Tennessee; of Grierson's great raid from Knoxville, Tennessee, in the North, across the State of Mississippi to Baton Rouge in Louisiana, in the South, 1000 miles in 24 days—a feat which paved the way to the capture of Vicksburg, and the seizure by the Federal troops of the Mississippi, the great highway of the Western States. A description might be given of Sheridan's final exploit with his three divisions of cavalry, which, by what General Grant called "Sheridan's throttling process," cut the line of retreat of the Confederate General Lee by a long sweeping movement, and brought about the closing surrender and the collapse of the Confederate cause at Appomattox Court House in April 1865. What nation has such a record to show as these of great strategical feats successfully achieved by masses of mounted troops?

In earlier times, in the Napoleonic campaigns of 1813 and 1814, the Russian cavalry operations were organised and led in a far bolder manner than in any previous campaigns of that age. Among the most famous, may be mentioned Tchernikoff's operations far in rear of the French army after the battle of Grossbeeren in the autumn of 1813. On this occasion the Russian leader, well emulated thereafter by the American commanders, advanced 140 miles at the head of 3000 horsemen and four guns into the heart of Westphalia, and captured and retained possession of Cassel, the capital of that kingdom, for more than a week. "The effect of this stroke," says Alison, in his history, "was soon felt through the whole North of Germany." In the same year, Tetterborn, another Cossack leader, captured Hamburg by a similar feat. Platoff,

* The Confederate force consisted of three small brigades, under Brigadier-General Wade Hampton, Colonel W. H. F. Lee and Colonel W. E. Jones, numbering 1,800 of all ranks.

A battery of four guns, under Major John Pelham, completed the column under Major-General J. E. B. Stuart.

A strategical march of 70 miles in 48 hours.



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again, with 7000 Cossacks and Austrian horse from Bohemia, encircling the French upon the Elbe, attacked and routed, far in their rear at Altenburg, the French cavalry under Le Fevre-Desnouettes.

Subsequent to the American war, the advance of Gourkha across the Balkans, with a mixed force of cavalry and lightly-equipped riflemen, in July 1877, may be cited as the first attempt by European troops to develop a similar "strategical power."

Coming nearer home, we are proud to recall the great strategical march of Major-General Sir D. Drury-Lowe's cavalry division in 1882 which captured Cairo by a *coup-de-main*, and at one blow arrested all the further bloodshed and all the loss of life which would else have followed upon the route of the Egyptian troops by Lord Wolseley at Tel-el-Kebir. The bold strategical march of the cavalry ordered by Lord Wolseley (a close student of military history) is the latest and best illustration of the system which the American leaders had initiated twenty years before, and forms a fitting close to that short and brilliant page of our military history.*

I should, however, be wrong to omit a very important instance of what can be achieved by mounted troops against savage and warlike tribes, operating in a difficult and bush-covered country. The result of the short and sharp Matabele war is still fresh in our minds. In a few short weeks, a column of less than 800 mounted men completely crushed and overthrew the most warlike and savage people known south of the African Equator—a people kindred in race and military organisation and prowess to that Zulu nation which cost England an expedition of 24,000 British troops of all arms, and a difficult campaign planned and carried out according to the recognised orthodox but costly laws of modern war.

A due appreciation of the value of mounted troops for such warfare, and a knowledge of the necessities for rapid movement in dealing with savages, saved in this instance a very serious

* The following Cavalry force took part in the above-mentioned march, Major-General Sir D. Drury-Lowe, K. C. B., Commanding :—

{	Household Cavalry
{	4th Dragoon Guards
{	7th " "
{	2nd Bengal Cavalry
{	6th " "
{	13th " "

N Battery, A Brigade, Royal Horse Artillery

Mounted Infantry

Mounted Detachment Royal Engineers

17th Company Army Service Corps.

This force marched from Kassassin at 8 p. m., 12th September, 1882, took part in the battle of Tel-el-Kebir at daylight, the 13th, and marching soon after captured the citadel of Cairo at 8 p. m., 14th September.

A strategical march of 70 miles in 48 hours.

campaign, which would undoubtedly have proved from its many difficulties costly alike in valuable lives and in public money.

Let us consider what gives this strategical power—this power of independent action—to mounted troops. It is, I would submit, that they shall be self-contained ; it is that they shall have with them the fire power which will enable them to compete on even terms with whatever description of an enemy's troops they may come in contact with.

Cavalry must, therefore, not only be trained themselves to use a firearm dismounted and with effect, but must be accompanied by riflemen or by infantry, who, though mounted, shall be so armed and trained that they can deal with an enemy's infantry or cavalry dismounted in a manner which no cavalry, organised and trained as modern British, German, French, or Austrian cavalry, can ever hope to do. The mounted force must further have its horse artillery ; must have its mounted engineers, who, as specialists, can repair bridges, destroy railways, or tap telegraph wires ; and must have its medical staff, who, with cacolets and field ambulance, can collect and transport the wounded whenever found.

The colony of New South Wales may now be congratulated upon possessing in its Mounted Brigade, under the veteran Colonel Macdonald, a force which, in many of its essentials, will answer such requirements, and which, with further training, and under officers of professional knowledge and experience, will be capable of great work, and which may, indeed, be counted upon to emulate the deeds of their American cousins.

This brigade has now its regiment of Lancers, who, as cavalry, represent the shock and fire tactics of European cavalry of the latest type ; it has its regiment of Mounted Rifles, who, as riflemen, possess the infantry weapon with the mobility that equals, if it does not excel, the Lancers ; it has its mounted detachment of Engineers, ready, part to destroy or to repair, part to send telephone messages or to tap existing telegraph wires ; it has, finally, its Medical Staff Corps detachments, with cacolets and field ambulance, and its detachment of Army Service Corps for supply and transport.

In no country in the world will a mounted force be found more necessary than in Australia, should the Almighty see fit to afflict the people of this great and prosperous continent with all the horrors of war within its shores. Distances are so great, transport away from the great lines of rail is so difficult, that, as in America at the commencement of the great war, so in Australia would success be to that force which had the best and the most completely equipped mounted force. It was entirely to the magnificent force of improvised mounted troops, which the characteristics of its inhabitants enabled the Southern States to put in the field, that their initial success was due, and it was not until the Federal

States, with their far greater resources, following in the footsteps of the South, similarly provided themselves with a powerful and efficient mounted force that the tide of success finally turned in their favour. So, I venture to think, would be found to be the result of any warlike operations which may in the future be conducted on this continent. Success will be to that army which can best turn to account the splendid inherent resources which the colonies of Australia possess in the supply of horsemen, who, while hardy and of independent character, have all those British characteristics which have made, and are now making, an Empire and a race without parallel in the history of the world.

Let me close my remarks by reminding you that the mobility of mounted troops for strategical purposes must be necessarily in direct ratio to the quality of their horses. It is a fact, I fear, only too patent to any careful observer, that the Australian horse is gradually deteriorating in bone, sinew, and therefore in staying power—in all those qualities which go to make a horse valuable for military purposes, and, I might add, for domestic purposes also. It is a subject which should engross the earnest attention of everyone interested in the future of this colony, viz., to consider what means should be taken to arrest the tendency to breed light, narrow, thoroughbred horses capable of nothing more useful than to win a six-furlong race. A future generation will, I fear, have serious occasion to rue the slight heed paid to the development of a breed of horses, which shall be valuable for its general qualities of utility.

It is, further, a matter which deserves earnest thought as to whether the capabilities of soil, of climate, and economic facilities possessed by Australia to breed horses have not been overlooked, and whether a great trade in horses, especially for military purposes, might not be developed in Europe with the most important results to the whole continent of Australia and to New South Wales in particular.

There are four descriptions of horses required for military purposes, namely:—

- | | |
|---|---------------------|
| 1. The Heavy Cavalry horse of bone, quality, and power | 16.0 hands. |
| 2. The Light Cavalry horse of good body and good quality | 15.2 hands. |
| 3. The Artillery horse of power and activity | 15.2 to 16.0 hands. |
| 4. The Transport horse of bone and power | 15.2 hands. |

The medium class, or light cavalry horse, may be estimated as representing to a European military power £75 as a five-year-old, or at the commencement of its military life. It may be calculated that 30,780 horses of all kinds are yearly required by the armies of Great Britain, France, Germany, and Austria—viz., France, 14,100; Germany, 9,370; Austria, 5,840; Great Britain (exclusive of India), 1,470. This enormous number is with extreme difficulty supplied even in times of peace; with the strain

of war, the demand for horses would be prodigious.

The importance of developing a trade in horses now in times of peace, with the prospect of increased demand in time of war, I leave to some more able pen than mine to show. I have only endeavoured to indicate the possibilities of a source of wealth which my experience in remount questions in other parts of the world has put me in a position to realise.

CONCLUDING REMARKS.

Having now concluded my paper on the important military question which I have endeavoured to bring before you in a practical form, I wish, in conclusion, to express what is far nearer to the heart of every soldier interested in the future of this important section of the world-wide British Empire—Australia.

We soldiers have a very heavy responsibility. We have entrusted to us not only the safeguarding of your present interests, of the defence of your shores, but we are charged also with the cultivation and increase in your midst of that military spirit which makes great nations. We represent among you the embryo of a future military greatness. The soldier has been reproached with being "outside healthy life and development of the British nation; that he constitutes not so much an organ of the body politic as a kind of excrecence."

"You may tell English trade," says the great apostle of British development in reply, "that you soldiers have been from the first its instruments; that you sprang into existence along with the trading policy of England and grew with its growth." From the Revolution of 1688 to the battle of Waterloo in 1815, war and trade have played into one another's hand, commerce being the principal and the army the agent. "The more trade," said the distinguished writer of the "Expansion of England," "the more war; and the more war the more trade."

In the days of Queen Elizabeth the interests of British trade, matured by a vague English yearning for colonisation within the closed preserves of the Spanish Dominion in the New World, was developed to an almost incredible degree by the English victories at sea over the Spanish Armada. Under the rule of Cromwell and Charles II., trade was yet more manifestly an agent in the fomenting of international warfare. In the reigns of William and Anne, and, in a somewhat less degree, in the younger Pitt's great French war, fears for the balance of power in Europe were a far more vehement incentive to armed hostilities than colonial and commercial interests, remunerative as they have proved. During the seventeenth and eighteenth centuries, British sailors and soldiers were invariably pioneers of British trade. In a precise ratio to naval and military success, commerce and the colonial empire waxed and waned, though the former was much the more usual process. It is a frequent cry that military feeling

and an aristocratic government have in the past plunged Great Britain into war and into debt. This fact there is no gainsaying; however that may be, the wealth of Great Britain and the influence of the Anglo-Saxon race have accumulated through commerce. The immense domains her children enjoy in Asia, Africa, and America are, in their actual forms, in a vast number of cases, the direct fruits of continuous and incessant European warfare. This great continent of Australia may, perhaps, be considered as the sole substantial exception to the rule. In a word, the expansion of our trade and of our colonial empire has generally coincided with periods of warlike vigour.

No one who knows Australia but foreshadows a great and splendid destiny. This continent, with its magnificent natural advantages, must hereafter become a great and powerful country, if only its inhabitants follow in the footsteps of the great race which has given them birth. Can Australia expect to achieve a great future by any other means than those by which all other great peoples have become powerful and rich? A nation, history reminds us, can only become great by passing through the sad ordeal of war. This is the lesson which the history of our own empire teaches us—the lesson which the student of history will find recorded in the story of the struggles of all great peoples. Australia, if she also is to become a great and prosperous country, as assuredly she will, must expect to pass through the same stern ordeal of war and of national difficulty.

It is our duty, then, as soldiers, to prepare for the future demands of Australia in this respect. It is for us now to organise for war; to teach and to train the rising generation as soldiers; to cultivate the military instinct in this young nation; and to teach the rising youth that love of country, self-abnegation, and a devotion to duty are the attributes which, of all others, we must cultivate. Thus only is a great nation made, and such is our responsibility as soldiers at this youthful and undeveloped stage in the history of New South Wales, or, may I rather say, of Australia? Do not then, gentlemen, let us abrogate our responsibilities, but each one do his best for the great cause of liberty and freedom, and contribute all that lies in our power to mould and to make the future destiny of this people as great, as useful, and as glorious, as that of the parent stock from which we spring.

War must be

While men are what they are; while they have bad
 Passions to be roused; while ruled by men;
 While all the powers and treasures of a land
 Are at the beck of the ambitious crowd;
 While injuries can be inflicted, or
 Insults be offered; while rights are worth
 Maintaining, freedom keeping, or life having,
 So long the sword shall shine; so long shall war
 Continue, and the need for war remain.

—*Bagly.*

In the debate which followed,

HIS EXCELLENCY said he would not follow the gallant Major-General in his military tactics, but agreed with his remark that as a rule Australian horses had not sufficient stamina. At the same time, he must admit that a great many efforts had been made in the colony to improve the breed of horses, evidence of which he saw at the last Singleton show, where he noticed stamps of animals calculated to produce the stock to which the Major-General had referred. He would, however, offer some comments on what he might call the Major-General's ethical principles of war. Since Major-General Hutton had been here, he had shown so much energy, and had brought to bear so much professional knowledge on the duties of his office, that he was sure he would not regard him as wanting in appreciation if he ventured in some degree to differ from his conclusions. He did not think the extract from Seeley, "the more war the more trade, and the more trade the more war," was appropriate to the age in which they lived. Modern history did not sustain that assertion. Since 1815, Great Britain had only engaged in one great war, and that with Russia, while all the great European powers had had several wars, and he thought they would agree with him that the trade of Great Britain had increased much more rapidly than that of any European country during this period. His Excellency did not think it necessary for Australia to be great that she must have a great war, because, if he understood him, the Major-General said that nations like infants must go through a period of privation before they could attain greatness, just as children went through the measles and the whooping cough. But he would venture to remind the gallant General that what he said might be perfectly true of any community which started a nationality of its own, but we here belonged to an old family and had outlived our infantile maladies. They were not a new nation, but a detached part and a very loyal portion of an old nation. They inherited the advantages their forefathers fought for, and he agreed with the General that they intended to maintain them. The greatest of them all was the supremacy of the seas, and that they meant to maintain. Out here they had, comparatively speaking, a small army, and, therefore, there was every reason why it should be efficient in all its branches. One way to obtain this was by securing the assistance of officers experienced in military tactics, and it would be almost impossible to over-rate the advantages the local forces had received from the services of such men as the Major-General and Colonel Renny-Tailyour, the latter of whom, he was sorry to say, they were going to lose. In conclusion, he said that, while it would be folly not to defend themselves, he looked forward with confidence to a peaceful Australia, and

hoped that her people would remember that "peace hath its triumphs more renowned than war."

MR. JAMES W. JOHNSON said Ruskin had laid it down as a matter of history, that in times of war genius and art flourished, but in times of peace the people lapsed into a state of inertia and enervation. He endorsed what the Major-General had said of the Australian horse. Forty years ago, one could get on a horse and ride him 70 miles day after day, but you could not find such a horse now. He blamed the leading race clubs for the deterioration, and thought that sprint races, such as they had, did not improve the breed.

MR. T. H. HASSALL, M. L. A., agreed that, as a rule, Australian horses were deficient in stamina, and in the colony they had thousands of horses which were not worth the grass they ate, and that state of affairs had been brought about by using a lot of worthless weeds which were supposed to be thoroughbred. If proper attention were paid to breeding, however, a class of horses could be bred here which would hold their own with any in the world.

COLONEL M'DONALD expressed gratification to find the General such a strenuous advocate of the rank entire system, because the New South Wales cavalry, which he had the honor to raise, had never known any other system. He was very much interested by his reference to General Stuart and the Confederate army cavalry, because the material of their cavalry in New South Wales was exactly the same, consisting of farmers', squatters' and settlers' sons. He had made an arduous study of the horse question, and was quite safe in saying that, when he was buying horses for the Russian war and the Indian mutiny, he bought animals here such as could not be obtained now.

At the request of Colonel M'Donald, a hearty vote of thanks was accorded the Major-General.

MAJOR-GENERAL HUTTON, in reply : I believe it is customary on these occasions for the lecturer to have the advantage of saying the last word ; it is an advantage sometimes. I do not presume to criticise your Excellency's criticism of the ethics of my paper ; I would only venture to say this : that war or no war, military qualities such as I have described are important factors for making a great people. I am extremely gratified that some gentlemen of experience and standing in the colony have made some remarks upon the all-important question of the Australian horse supply. I was led to introduce the subject into my paper for the reason that, when coming out here to take command of the troops, the remount authorities in Great Britain, with whom I had been brought closely in contact, asked me especially to consider the question of the European horse supply in case of war. It is a perfectly well known fact

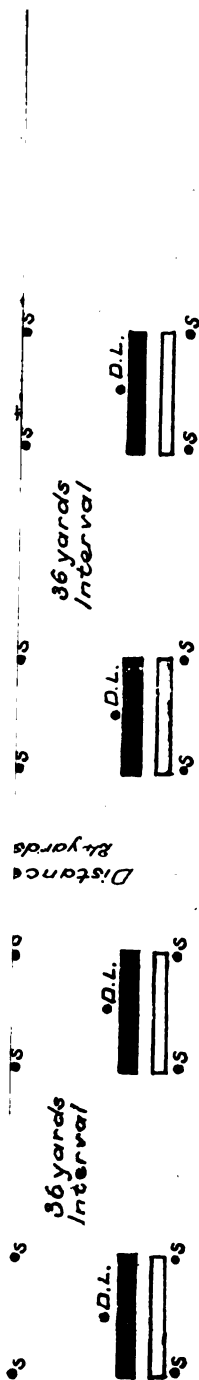
that, in the old country, we have the most extreme difficulty now in getting the horses we require for completing our ranks, and we know in time of war it would be an impossibility. Further, the cavalry and artillery horses which we have at present in the United Kingdom are not of the character and kind which we, as soldiers, consider desirable. They are almost entirely bred and reared in stables, and, in our experience of recent campaigns during the last 25 years, we have found our English horses will not stand the rough work and exposure to which they are subjected. You have here, in this country, everything which is necessary for breeding the best stamp of horses that the world can produce. You have the soil, climate, and the blood, and you only require to develop the old markets and create fresh ones for your horses. I feel certain that what Mr. Hassall says is true, *viz.*, when good horses were necessary for station purposes, they were bred accordingly. But we now have railways, cable trams, and excellent carriage roads throughout the country. I would urge upon all, who are interested in the question, to develop by all means in their power a trade which will make the horse supply of this country what it was in the past, and what it should be in the future. I thank the audience very much for their kind attention to my remarks, and I ask you all to return a vote of thanks to His Excellency Sir Robert Duff, for having done me the great honor and you the pleasure of taking the chair upon this occasion.

HIS EXCELLENCY, THE GOVERNOR : I thank you very kindly and warmly for the reception you have given me on my first visit to the United Service Institution. It has been so interesting that I hope, for my sake, it will not be the last.

DIAGRAM I.

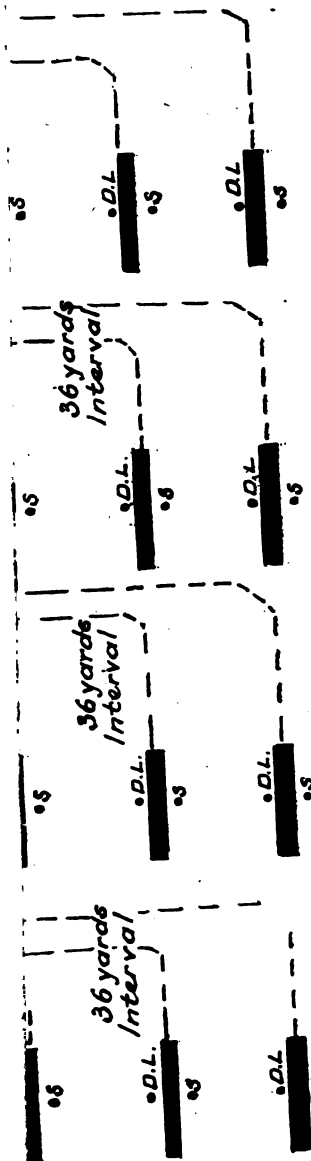
Scale 1 Inch = 40 Yards.

#C.O.
•7



- (a) Regiment of 4 Squadrons in Line of Squadron Columns at deploying interval. viz: the frontage of the rear troops of each squadron plus 12 yards in double rank, i. e., front and rear rank formation, *via* Cavalry Drill Book, 1885-87."
- (b) Each Squadron, 100 rank and file as in Diagram I.
- (c) It will be noted that the intervals between Squadrons is the same as in Diagram I.





"BOER FORMATIONS" or SQUADRON COLUMNS ADVANCING BY HALF-SECTIONS FROM A FLANK.

NOTES.

- (a) Regiment of 4 Squadrons in Line of Squadron Columns as per Diagram I, the command (or signal) is given "Advance in Squadron Column of Half-Sections in 'Boer Formation,'" from the right (or left) of Divisions, "walk" (or "gallop"), "march."
- (b) When manoeuvring by signal, after *cautionary whistle*, Squadron Leaders conform to directing division of the Directing Squadron.

U.S. 11932



• 36 years

• 36 yards

مکتبہ اسلامی

July 5/97
1897
1897
1897

Self Squadron
laying interval
at 10 minutes on
out

36 yards

36 yards

36 yards

6 C.O.

A

Squadron Column
of Half Sections in
Close Order or "Quarter
Column"

0.31 1734
CAN

1/2
yards

1/2
yards

1/2
yards



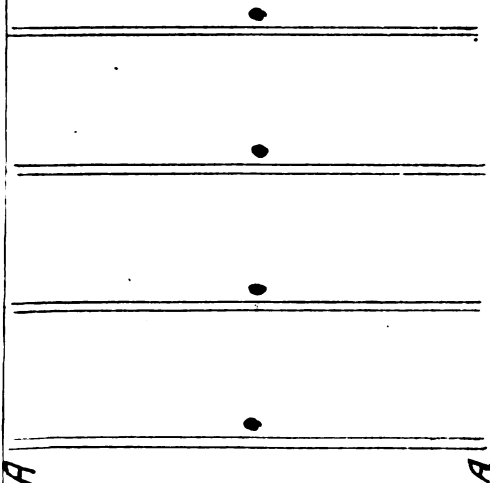
to flank (right)

(b) The figures half-way show the Squadron
in Half-Sections on the Diagonal march
or "Luching" series to

A

to flank (right)

(b) The figures half-way show the Squadron in Half-Sections on the Diagonal march or "Incline," prior to arriving at CC, and receiving the command or signal, "Forward."



U.S. 1. No. 35
C. J. H.

● S.S.



GENERAL LEE.

BN LIEUT. D. M. BOWER, 2ND BENGAL INFANTRY.

A brief glimpse at the qualities of General Lee, who amongst modern generals stands probably second only to Napoleon, will afford most interesting matter for reflection. Lord Wolseley, referring to him, says, "No man has ever fought an up-hill and a losing game with greater firmness, or ever displayed a higher order of true military genius than he did when in command of the Confederate army."

The following quotation is taken from a biography by Colonel C. Chesney, and is a good illustration of Plutarch's saying, "The greatest talent of a general is to command obedience through the affection he inspires." "The subtle influence of sympathy, which wins many hearts for one, was never more rapidly exercised. Like Napoleon, his troops soon believed him equal to every emergency that war could bring. Like Hannibal, he could speak lightly and calmly at the gravest moments, being himself least grave. Like Raglan, he preserved a sweetness of temper that no person or circumstances could ruffle. Like Caesar, he mixed with the crowd of soldiery freely, and never feared that his position would be forgotten. Like Blucher, his one recognised fault is that which the soldier readily forgives; a readiness to expose his life beyond the proper limits permitted by modern war to the Commander-in-Chief. What wonder, then, if he thenceforward commanded an army in which each man would have died for him: an army from which his parting wrung tears more bitter than any fall of their cause could extort: an army which followed him, after three years of glorious vicissitudes, into private life, without one thought of further resistance against the fate to which their adored chief yielded without a murmur."

That most brilliant and distinguished Confederate general, Longstreet, writes of his great chief "Out of battle he was as gentle as a woman, but, when the clash of arms came, he loved fighting," and again, "He was not given to expressions of pride. Under all circumstances he was a moderate talker and in everything unassuming."

If his order had been carried out at Gettysburg, then doubtless he would have won the battle, and the South would probably have gained her independence. Yet this noble nature found fault with no one but himself. "He sought for no vicarious victim to atone for his one disaster. I alone am to blame; the order for attack was mine" (D. H. Hill).

The student, however, who studies carefully the battle of Gettysburg, will see clearly that one of Lee's ablest lieutenants was very much to blame.

Three anecdotes illustrate the affection of the Confederate soldiers for their beloved chief. Major-General E. M. Law states, "Whatever General Lee did, his men thought it the best that could be done under the circumstances. Their feeling towards him is well illustrated by the remark of a 'ragged rebel' who took off his hat to the general as he was passing, and received a like courteous salute in return; 'God bless Marse Robert; I wish he was emperor of this country and I was his carriage-driver.'"

In an article on the Wilderness campaign, Colonel Venable, C. S. A., writes, "Lee was in the midst of Hill's sullenly retreating troops, aiding in rallying them, and restoring confidence and order, when Longstreet's men came gallantly in and restored the line of battle under his eye. Lee's presence at the front roused his men to great enthusiasm. He was a superb figure as he sat on his spirited grey, with the light of battle on his face. His presence was an inspiration. The retreating columns turned their faces bravely to the front once more, and the fresh divisions went forward under his eye with a splendid spirit. It was on this occasion that the men of the Texas brigade (always favourites of the general) discovering that he was riding with them into the charge, shouted to him that they would not go on unless he went back. One ragged rebel, stepping from the ranks, seized his horse's bridle and firmly but politely led him to the rear."

In defeat, the affection displayed by Lee's troops was not less than in victory. General Long informs us, "When after his interview with Grant (at the surrender at Appomattox Court-house), General Lee again appeared, a shout of welcome instinctively ran through the army. But instantly recollecting the sad occasion that brought him before them, their shouts sank into silence, every hat was raised, and the browned faces of the thousands of grim warriors were bathed with tears. As he rode slowly along the lines, hundreds of his devoted veterans pressed around the noble chief, trying to take his hand, touch his person, or even lay a hand upon his horse, thus exhibiting for him their great affection. The general, then, with tears flowing down his manly cheeks, bade adieu to the army."

Perhaps the most striking, certainly the most important, military feature in Lee's character was his extraordinary knowledge of human nature, which is best exemplified in his marvellous power of divining the enemy's intentions. "It is to be ignorant and blind," wrote the Grecian biographer of

Hannibal, "in the science of commanding armies, to think that a general has any thing more important to do than to apply himself to learning the character and inclinations of his adversary." The following clear and forcible remarks by Major Henderson are worthy of the closest attention ; "War," he says, "is more of a struggle between two human intelligences than between two masses of armed men ; and the great general does not give his first attention to numbers, to armament, or to position. He looks beyond these, beyond his own troops, and across the enemy's lines without stopping to estimate their strength or to examine the ground, until he comes to the quarters occupied by the enemy's leader ; and then he puts himself in that leader's place, and with that officer's eyes and mind he looks at the situation ; he realises his weakness, strategical, tactical, and political ; he detects the points the security of which he is most apprehensive ; he considers what his action will be if attacked here or threatened there, and he thus learns for himself, looking at things from his enemy's point of view, whether or no, apparent risks are absolutely safe." Further he states, "The great Civil War in America was fought out by generals who were, some of them, in the first rank, for the respect they paid to the moral aspect of the war was remarkable. The greatest of all was Lee, and his Military Secretary writes as follows ; "He studied his adversary, knew his peculiarities, and adapted himself to them. His own method no one could foresee ; he varied it with every change in the commanders opposed to him. He had one method with McClellan, another with Pope, another with Hooker, and yet another with Grant. But for a knowledge of his own resources, of the field, and of the adversary, some of his movements might have been rash. As it was, they were wisely bold."

We will further illustrate this matter from an example offered by the Peninsular campaign. D. H. Hill says, "Longstreet and A. P. Hill were sent across the river at New Bridge early on Sunday morning, to move down the Darby town road to the Long Bridge road to intercept the retreat to the James River. This movement began before it was known that General McClellan had evacuated his stronghold. Lee gave here the first illustration of a quality for which he became noted—the remarkable discernment of his adversary's plans through the study of his character.

McClellan could have retreated to Yorktown with as little loss as Johnston sustained on his retreat from it. The roads from Richmond to Yorktown lead through a wooded and swampy country, on which strong rear guards could have afforded perfect protection to a retreating column without bringing on a general engagement. General Johnston, on his

Magnificent strategy

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faltered. Their sufferings were
The simple piety, which all knew
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those can hardly understand who
of hope, of suffering, and danger fairly
situation of war, quickens the sympathy of
lowest as well as of those above them. He
was seen by all to grow only greater as the
war; he who was as constant in the lines during
as watch against the foe that never attacked, as he
when Grant hurled fresh legions on him day after day
in the thicket of Spottsylvania; he who, in short,
lived up to the motto he is said to have commended
own children on entering life, as the only sure guide,
is the sublimest word in our language; now illustrated
person that other motto which he bequeathed to the army
when it dissolved, 'Human virtue should be equal to human
calamity'; the very hope of saving from humiliation the State
for whose safety and honour he had sacrificed his high prospects
in the army of the Union, must now be despaired of. Yet the
firmness of his bearing, and his unflinching attention to the hour-
ly business of his office, never declined for a moment, and im-
pressed alike the falling government of the Confederacy, the
defeated citizens of its capital, the humblest soldiers of its army."

When Grant, with 130,000 men well fed and equipped, lay
round Lee's starving and ragged troops, the latter were as
ready to die for their beloved chief as ever. They never com-

retreat from Yorktown, did fight at Williamsburg, but it was a battle of his own choosing, and not forced upon him by the vigour of pursuit. Lee had but little idea that McClellan would return to Yorktown, judging rightly that the military pride of his distinguished opponent would not permit him to march back a defeated column to the point from which he had started, a few months before, for the capture of the Confederate capital, with his splendid army and magnificent outfit. It is a proof of Lee's sagacity, that he predicated his orders for an advance upon the belief that General McClellan was too proud a man to fall back by the same route by which the triumphal advance had been made. A great commander must study the mental and moral characteristics of the opposing leader, and Lee was specially endowed with an aptitude in that direction. At the battle of Salzbach, Montecuculi, the Austrian Commander, noticed the French troops making a movement so different from the cautious style of his famous rival, that he exclaimed, "Either Turenne is dead or mortally wounded." So it proved to be : the French Marshal had been killed by a cannon ball before the movement began.

To describe all Lee's campaigns would require volumes. We can only take a passing glance at one or two. Regarding the Chancellorsville campaign, Dabney writes, "With 45,000 men he had met and defeated 125,000 who were equipped for their onset with everything which lavish wealth, careful discipline, and deliberate preparation could provide. He had inflicted on them a total loss nearly equal to his own army, had captured enough small arms and camp equipage to furnish forth every man in his command, and, in precisely a week, had hurled back the fragments of this multitudinous host to its starting point, baffled and broken. His line of defence was successfully turned on his right and left by an adroit movement, his communications severed, and his little army seemingly placed within the jaws of destruction. But with an impregnable equanimity he had awaited the full development of his adversary's designs, and then, disregarding for the time those parts of his assault which his wisdom showed him were not vital, had concentrated his chief strength upon the important point, and, with a towering courage which no odds could appal, had assailed his gigantic adversary on his vulnerable side with resistless fury."

How bright the mighty genius of this great Confederate shone in the Richmond campaign, is well known to all military students.

According to Lord Wolseley, the five greatest generals of ancient and modern history are Hannibal, Caesar, Marlborough, Napoleon and Lee. One of the chief reasons for

thus ranking Lee, is doubtless due to the magnificent strategy of the above campaign.

If we wish to properly appreciate the true nobility of Lee's character, we must look at him in adversity, and, with this object in view, we cannot do better than quote from Colonel C. Chesney, who writes, "Not in the first flush of triumph when his army cheered his victory over McClellan : not when hurling back Federal masses three times the weight of his own on the banks of the Rappahannock : nor even when advancing, the commander of victorious legions, to carry the war away from his loved Virginia into the North ; had Lee seemed so great, or won the love of his soldiers so closely, as through the dark winter that followed. Overworked, his men were sadly, with forty miles of entrenchments for that weakened army to guard. Their prospects were increasingly gloomy as month passed by after month, bringing them no reinforcements, whilst their enemy became visibly stronger. Their rations grew scantier and poorer, whilst the jocund merriment of investing lines told of abundance, often raised to luxury by voluntary tribute from the wealth of the North. But the confidence of the men in their beloved chief never faltered. Their sufferings were never laid on 'Uncle Robert.' The simple piety, which all knew to be the rule of his life, acted upon thousands of those under him with a power which those can hardly understand who know not how community of hope, of suffering, and danger fairly shared amid the vicissitudes of war, quickens the sympathy of the roughest and lowest as well as of those above them. He whose composure was seen by all to grow only greater as the hour grew darker ; he who was as constant in the lines during the monotonous watch against the foe that never attacked, as he had been when Grant hurled fresh legions on him day after day in the bloodstained thickets of Spottsylvania ; he who, in short, had long lived up to the motto he is said to have commended to his own children on entering life, as the only sure guide, 'Duty is the sublimest word in our language'; now illustrated in his person that other motto which he bequeathed to the army when it dissolved, 'Human virtue should be equal to human calamity ;' the very hope of saving from humiliation the State for whose safety and honour he had sacrificed his high prospects in the army of the Union, must now be despaired of. Yet the firmness of his bearing, and his unflinching attention to the hourly business of his office, never declined for a moment, and impressed alike the falling government of the Confederacy, the dejected citizens of its capital, the humblest soldiers of its army."

When Grant, with 130,000 men well fed and equipped, lay round Lee's starving and ragged troops, the latter were as ready to die for their beloved chief as ever. They never com-

plained or murmured at him. "Their cheers for him when he visited their lines were as ready as of old ; but their hungry eyes gazed more wistfully on his retreating form, each time that he passed from them."

After the decisive actions of Five Forks, followed by an assault of the whole Confederate lines, we see Lee as darkness closed in on that eventful night, "amid the glare of explosions from the abandoned works, standing at the angle of the road chosen for retreat up the north bank of the Appomattox, guiding and cheering his troops in person as they reached the point, and following them only when the last man of his ragged and weary columns had passed by."

We would point out, in passing, that the masterly manner in which Sheridan handled his troops at the above battle alluded to, *viz.*, Five Forks, will afford most interesting and instructive matter for those who are desirous of making a special study of the three arms combined.

The value of the study of the American Civil War to English officers is too well known to be appreciated here, but we may safely say that not the least useful portion of the task is the Life and Campaigns of Lee, of whom it has been said, "In strategy mighty, in battle terrible, in adversity, as in prosperity, a hero indeed, with the simple devotion to duty and the rare purity of the ideal Christian knight, he joined all the kingly qualities of a leader of men."

Before concluding this brief sketch, it is interesting to note the extremely erroneous estimate that was formed of Lee even after the commencement of the war. This is not to be wondered at, for we have only to read history to realize how utterly worthless were the opinions formed of some of the greatest soldiers of history. To Englishmen, perhaps, the most striking examples were the poor opinion entertained of the Duke of Wellington at the commencement of his career ; and the base manner in which Sir John Moore was calumniated, even after he showed himself to be a general of the highest ability. The latter example is a good illustration of the truth of the following quotations.

"As the height of towers is measured by the length of their shadows, so is the greatness of great men measured by the number of their calumniators.

It is the tall pine which is cruelly shaken by the wind, and the lofty towers which fall so heavily ; the highest summits that are struck in the storm."

The average intellect is blind to those grand and noble qualities which fit an individual to be a leader of men." Res-

fect is not paid in this world to that which has real merit, it is reserved for that which has none."

Only on the score of authority is real worth recognised, but, even then, not always as is daily apparent to the observant mind.

"At the beginning of the war Lee met with a failure, while McClellan was successful; whereupon people jumped to the conclusion that McClellan was "the young Napoleon of the Union; and the critics of Charlestown and Richmond poured forth their strictures on General Lee as an over-refining strategist too subtle for practical warfare, and declared him the only mistaken choice among their commanders; judgments which were destined to be singularly reversed a few months later."

Those kindly critics who pronounced Lee too theoreticai were incapable of realizing the fact that "when shrewd men study theory, they have an awkward knack of putting therl theory into most deadly practice;" as Lee did shortly after this unfortunate estimate was formed of him.

Although the flame of battle has very often reversed the opinions formed of great soldiers, yet, even this apparently severe test does not always award justice to a great leader, as we see in this instance, or, as further illustration, in the case when it was deemed necessary to bring the Duke of Wellington before a Court of Inquiry at the beginning of the Peninsular War.

It is trifling minds which shine in trifling matters: while the rich and powerful are in abeyance, and we have no better example of the latter than Napoleon, who "as a young officer cordially hated routine and despised the petty duties of his rank. But he delighted in studying and reflecting on the mighty deeds of men and peoples, especially of antiquity." He was essentially what would be termed a bookworm, and this apparently contemptuous epithet is what the junior officer, who aspirés to be a brilliant leader, must expect, for the greatest captains in the world's history have been profound students of the art of war. The absolute necessity of conscientious study and reflection to form a good officer, however humble his position may be in the military hierarchy, is too well known and appreciated of late years to be dealt with in this article.

While referring to Napoleon, we may here remark that it would have required a most prophetic mind to have foretold a great future for him, seeing that, "His colonel, angry at the notoriety which the lieutenant had acquired, had already sent in a complaint of Bonaparte's insubordinate spirit and inattention to duty."

We need even go no farther than that giant in the art of

war, Lee's great opponent, Grant, to realize how seldom is merit rightly esteemed. Colonel C. Chesney writes, "Grant's extreme simplicity of behaviour and directness of expression imposed on various officers, both above and below him. They thought him a good plain man, who had blundered into one or two successes, and who therefore could not be immediately removed: but they deemed it unnecessary to regard his judgment, or count upon his ability. His superiors invariably made their plans without consulting him, and his subordinates chose sometimes to carry out their own campaigns in opposition or in indifference to his orders, not doubting that with their superior intelligence they could conceive and execute triumphs which would excuse or vindicate their course. It is impossible to understand the early history of the war without taking it into account that neither the Government, nor its important commanders, gave Grant credit for intellectual ability or military genius."

The estimate formed of Lee's right arm, "Stonewall" Jackson, was not less unfortunate. He was, without doubt, the greatest executive officer of the war; of whom it has been written that "he possessed the perfervid zeal of one of Cromwell's colonels and a mastery of ruses seldom rivalled since the days of Hannibal." Yet his biographer, Dabney, writes. "The larger number professed to depreciate his capacity, and not a few declared that he was manifestly mad." Before a man can form an estimate of the intrinsic value of another he must be intellectually his superior, otherwise his judgment will be of no more value than the puerile opinions entertained of some of the greatest generals of the world's history, before war had proved their true merit. To make this matter quite clear, we cannot do better than quote Schopenhauer, who writes, "You cannot see in another man any more than you have in yourself; and your own intelligence strictly determines the extent to which he comes within its grasp. If your intelligence is of a very low order, mental qualities in another, even though they be of the highest kind, will have no effect at all upon you; you will see nothing in their possessor except the meanest side of his individuality—in other words, just those parts of his character and disposition which are weak and defective.

Your whole estimate of the man will be confined to his defects, and his higher mental qualities will no more exist for you, than colours exist for those who cannot see."

"Intellect is invisible to him who has none."

It appears that the usual criterion by which an officer is judged is his "Smartness," regarding which qualification, Brigadier-General McDonald writes, "There is no phase in human existence in which such absolute unreason has blocked the way

of sensible improvement than in that which, in military jargon, is called 'Smartness.' It may be absolutely idiotic as applied to existing circumstances, and be anything but smart in the abstract."

SIGNALLING.

BY LIEUTENANT C. DE W. CROOKSHANK, R. E.

I am sure every body has been much interested in the article on "Visual signalling" which appeared in the June issue of this Journal; but I would venture to draw the writer's attention to a small but somewhat important mistake, at all events from a telegraphist's point of view, which I cannot but think equally affects Army Signalling also. To quote the three last lines of para. 1 of the article, we have:

"Good signalling depends upon the accuracy with which the correct lengths of dots and dashes, and the separating intervals and pauses, are maintained."

This does not strike one as being fulfilled in his recommendation; as, on examining the diagram given for "Attack at day break" on the example sheet, it will be clearly seen that a space amounting to "1 unit" or "a dot" is left on either side of the "pause" sign between each letter, giving a total pause of 5 units; and that, besides the "separating interval" signal between words, a gap is given amounting to about double that interval or "12 units."

This would be disastrous tuition after the distinctly laid down principles with which the article opens: *i. e.* "the pause between each complete sign or letter should be made equal to a dash or three units, and the pause between words (or groups) should be double, or six units."

This can be readily obviated in the system proposed by adhering rigidly to the recognised principles; by joining the "pause" and "separating interval" signs to the symbols they immediately affect; and I am sure the writer will have no objection to this suggestion.

Perhaps it will not be out of place to give the system of intervals employed in the Telegraph Department, and its rules for the examination of signallers in this important matter:

1. The unit of length of signal is the dot.
2. A space, to be left between two dots or a dot and a dash forming part of the same symbol, is equal to the space occupied by a dot=1 unit.
3. A dash is equal in length to the space required to form a dot, a space and a dot=3 units.
4. The space to be left between two letters is the length of a dash=3 units.
5. The space to be left between two words is equal to a dash, a space and a dot=5 units.

It will be noticed that a "5 unit" space is used where apparently a "6 unit" one is used in Army Signalling.

Signallers, up to the present, have always been examined in "sending" and "receiving" an 80 word message (the equivalent of 72 five-letter words and 8 three-figure groups) in a certain time.

From the gross rate per minute, arrived at by dividing the 80 words by the time taken to signal, the following deductions are made :

In receiving.—Two words for each mistake, whether the mistake be an error, an omission, or an illegible word.

In sending.— $\frac{2}{30}$ *ths* of a word for each fault in spacing, and $\frac{1}{30}$ *ths* of a word for every fault of other kinds. Faults in sending should be subdivided as follows :—

Bad spacing.—Dots or bars of incorrect length, spaces of incorrect length between signals, letters and words.

Mistakes.—Words wrongly spelt, signals having no meaning, letters or words left out or inserted.

Exaggerations.—Additional signals to letters and figures ; such as 5 dots for N, 6 bars for O, etc.

Omissions.—Converse of exaggerations.

Alterations.—G for O, R for W, and any faults in space, length of dots or bars which change one letter into another.

All examinations in sending must be recorded on tape, and are sent through an Inkwriter ; a system which has a wonderful effect in improving signalling and is of course the only one for checking oral work.

THE SWORD OF THE INFANTRY OFFICER.

BY MAJOR V. C. TONNOCHY, 4TH SIKHS,

PUNJAB FRONTIER FORCE.

The following remarks are not offered as being in any way original. But, although not original, it has seemed to me they are worth offering, as in recent discussions on officers' swords certain elementary principles seem to me to have been lost sight of. I submit them with this excuse.

When the noble savage first sought to slay his enemy, he had—besides stone-throwing—two ways of killing him. One was by hitting him over the head with a club, the other running him through with a sharpened bamboo.

Now it is patent that a club is not grasped by the thick end nor the bamboo by the thin end. Herein note the first principles of striking and thrusting weapons. The weight of the striking weapon must be at or near the far end, that of the thrusting instrument under the hand. Leaving the further development of the noble savage in the art of fighting, let us come to modern times and edged weapons.

Now, in the construction of modern or comparatively modern weapons, three principles are brought to bear. The first two as above

- (a) hitting and
- (b) thrusting motions,
- and (c) sawing or filing motion.

These three are not found always separately, they are usually in some combination.

Of the first principle, the best example is an axe or hatchet. This depends for its effect entirely on the direct blow and gives the deepest and deadliest cut. The best example of the second is the duelling foil. Of the third, the saw is of course the embodiment.

Now history seems to show that man has sought to combine in the sword the first two principles from the earliest ages. The ancient swords are all shortish, two-edged and brought to a point. This is so even in the flint period.

But the degree in which the hitting and thrusting principles have been combined varies much.

For instance, in the Gurkha *kukri* we have a weapon that is very nearly indeed a hatchet. It is as if the handle of a hatchet had been made of steel and sharpened and broadened up into the head of the hatchet. The *kukri* accordingly lends itself almost entirely to cutting.

On the other hand, the long Spanish rapier of the middle ages—sharp on both edges—was a weapon adapted chiefly for thrusting but so made as to be available also for cutting. Of the third principle, the Eastern scimitar with curved, almost semicircular, blade is a representative. The design of this weapon is a little more elaborate than the other two. If the edge of a sword is examined with a strong microscope it will be found to have teeth like a saw, to be in effect a saw, although the teeth are invisible to ordinary sight.

If the edge of a sword, therefore, be placed on any softer substance and drawn along it, the result will be a cut.

Now, in order to make an absolutely direct hit it would be necessary that the weapon should be quite straight, and the arm kept perfectly stiff, so that the two should form together a single radius of a circle. But this is not, and cannot be, the case. The sword is held at first at about right angles to the forearm and pivots on the hand; the forearm is also bent upwards and pivots on the elbow; the whole finally pivots on the shoulder.

It will be seen therefore that a drawing cut is to some extent an absolute necessity.

The man, who first gave a curve to the sword, saw this. He saw that an upward curve given to the sword would improve the blow by lengthening it, and therefore also deepening the cut. Finally, by increasing the curve it was seen that very little blow need be given at all, that the same result was attained as when an object is drawn along the edge of a straight sword.

Let us go back now to the combination of hit and thrust. We have seen that there are two extreme examples of it, namely the *kukri* and the long rapier. Imagine the *kukri* made as long, say as a cavalry sword. It is evident it would be hopelessly unwieldy. On the other hand, imagine the rapier made as short as the *kukri*. It would give no blow.

Length therefore has to be considered in the combination. The *kukri* can be used as a thrusting weapon by reason of its shortness, the rapier as a cutting weapon because of its length.

It would take too long to follow the sword in all its developments. The question we now come to is :

What sort of sword do our Infantry officers require ?

First, will a simple thrusting weapon, such as used in fencing schools but made perhaps stouter to resist cuts and rough usage, do ?

In my opinion it will not, and for the following reasons :—

- (1) A thrusting sword, without edges to speak of, has to be made of highly tempered steel. Otherwise, it is apt to remain bent when thrust into the object and withdrawn. If it is thickened to any great extent,

to allow of inferior steel being used (and is fluted), it becomes unhandy, being too heavy. But highly tempered steel is brittle, and of what further use in fight would a sword of this description be if even the point only broke off? Absolutely none.

Yet that accident is extremely likely to happen.

- (2) A thrusting sword, let us call it a foil, requires extreme delicacy in handling. It is true, a thrust can be made with great rapidity. But it can also be turned with great ease. A shield, even a stroke of the left hand, will turn it aside.
- (3) The foil player must be expert. Fencing is, of all exercises, the most absolutely necessary to acquire for an officer. Yet it is as impossible that every officer should become expert in it, as that every private should become a marksman. Yet if, for instance, a hill man is not thrust through the heart there is little chance of a foil (in which I include the latest pattern sword) stopping him.

Would a simple cutting weapon do?

The best weapon for cutting only, is the curved Eastern blade but it has the following strong objections:—

- (1) To get the full effect of the drawing cut, the edge should be that of a razor, that is the weapon should be of the finest tempered steel. If so made, it is extremely brittle.
- (2) A man must know how to use it, either by being more or less born to it, or by practice. The Englishman is not born to it. His strong arm loves a blow. To practice it and become proficient would take as long as to learn fencing, and would be infinitely less useful in other ways.
- (3) For an infantry officer, it is very awkward to carry. Carry it how you will, it is sure sometime to get between your legs.
- (4) It is extremely ineffective in guarding a thrust, and would therefore be useless in European warfare.

If we grant these premises, some combination, some form of cut and thrust instrument, is necessary.

It is also advisable on other grounds. I have said already that a light thrusting weapon, unless the point is delivered with an accuracy improbable in war, will not stop a determined adversary.

But it seems to me, the experience of ages has shown that human nature must be taken into account and the probability that in excitement the impulse is to strike, has to be allowed for. A mere

light thrusting weapon will moreover not turn a rifle thrust.

I would here beg to give my opinion that the new Infantry officer's sword has no good points about it whatever.

Although it can be sharpened half way or thereabouts, a cut with it would hardly hurt a child. For thrusting purposes it is clumsy and not handy. Far better for thrusting only, would be a three-cornered blade, like the old bayonet. Such a sword at any rate, would not tempt one to strike, the weight would be far better distributed, and the blade be more rigid.

The sword just superseded was intended to embody these principles I have explained. The weight was sufficiently forward to throw the point of percussion about two thirds of the way down, the blade was curved backwards to increase the effect of the 'draw' and the whole sword was light enough to thrust with. Nevertheless, the sword was a distinct failure. It did nothing well. The hit was feeble, the draw was insufficient, the thrust was not direct, the blade insufficiently rigid. Over and over again it has failed. Before explaining the kind of sword I consider best, I should like to explain a little further the principles regulating its length.

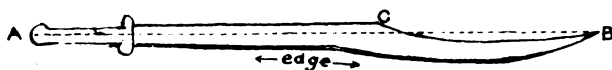
A combination cut and thrust sword must be of medium length. If very long, it is top-heavy and useless for thrusting. If very short, useless for cutting. But yet another point to be considered, is guarding.

The Roman used a short cut and thrust sword because he had his shield for guarding. The modern has to use his sword for guarding too. Now the present sword is undoubtedly about the right length for this purpose. Put yourself on the hanging guard, get well down on your legs, and you find there is little of the body uncovered. A very slight movement will protect even the lower part of your legs. But, for war purposes, the sword might be shorter. If the officer can easily cover the vital parts, it will be sufficient. It is not likely an enemy will be stooping low and making sweeps at his shins, and the shorter the sword, the handier. A sword of 27" or 28" length of blade (handle of course not included) would be ample for all practical purposes. A short sword, too, is much more easily and comfortably carried at the side. What then would be the best shape? The old shape failed, I believe, because it attempted to do too much. The three principles of hit, thrust and saw cannot be combined in one weapon.

The hit and saw can be combined (as in the Afghan *talwar*)—or the cut and thrust. The latter is the only one that concerns us, as it is essential to have the thrusting power.

There are two weapons that properly combine these principles. One is the blade of the Yataghan shape when properly con-

structed. The example, in our army, of this is the old sergeant's sword bayonet. I give a sketch to illustrate my meaning.



It will be seen, the point B is in a straight line with A, i. e., the axis of the handle passes through the point, accordingly a straight thrust is possible. The downward curve and the broadening of the blade at C gives a very fine striking power. Such a sword with a broad, light, well-grooved blade would be a very efficient weapon.

It is, after all, however, better in the long run to stick to a national weapon. A well-tried weapon is the naval cutlass. I would myself recommend a modification of that.

The length I recommend, 27", would make it handy for turning thrust of sword or rifle. Its breadth, which I should have not less than one and a half inches carried evenly to a few inches of the point, would give it excellent striking power. The back of the blade perfectly straight and the edge carried in a curve back to it. The back edge broad, the blade well grooved and made of not too fine steel, the axis of the handle passing through the point.



The hilt should be roomy, the grasp should bulge outwards in the centre to give a firm hold to the hand, and should be covered with rough leather. Such a sword would not be a sword for the fencing room, though an expert man would probably hold his own; but the officer who had it at his side would undoubtedly feel as if he had something that he could depend upon. I have, further, no doubt that any sword-maker would declare he could make a better job of such a weapon than of either the present or the last pattern.

It can, moreover, be hardly considered a revolutionary proposal.

Something should surely be done about the officer's sword. The present is a weapon hardly even ornamental, certainly of

little use. Revolvers are always failing at critical moments (chiefly however from neglect to loosen the trigger after the first shot), and it is well one should feel a certain amount of confidence in the only other weapon left.

NOTE.—The weight of this sword, no one but a sword-maker could tell. Much depends on the steel used, but it should be very little more than the sword most of us have, the old pattern sword. On the other hand, it would be much more comfortable to carry and to use.

EXPERIENCES OF TELEGRAPH OFFICIALS IN KASHMIR DURING THE WINTER, 1894-95.

(KINDLY CONTRIBUTED BY THE DIRECTOR-GENERAL OF TELE-
GRAPHS, AND PUBLISHED IN NARRATIVE, OR DIARY, FORM AS
RECEIVED. THE EXPRESSION "INS" EVIDENTLY
MEANS "INTERRUPTIONS.")

Signaller M. C. Johnson's narrative.

I beg to submit the following as my experiences in Kashmir during the winter, set down simply as they occurred :—

From the 19th to the 23rd of December was out on patrol duty towards our block hut on the Tragbal pass. Average snowfall then about $3\frac{1}{2}$ feet in the valley up to Zotkushu, and 4 feet on the pass. Avalanches of any consequence had not come down then, although only a week afterwards the poor postal overseer, Ramzan Gani, was killed by one near our block hut.

We had a fairly good trodden path almost the whole way. The only inconvenience was caused by the keen strong wind right on the top of the pass, (it is so strong that it carries all the snow down the *nullah* on the south side, leaving a bare track for fully $1\frac{1}{2}$ miles to our block huts), and also from the wretchedly built chimneys of every one of the bungalows, not one of which draws well; on account of this, fires cannot be kept up for any length of time for fear of being suffocated. The line was right. Returning to Gurais on the 23rd, we spent a very dull Christmas crouching over the fire all day, thinking how different it would be if we were down in India.

On the morning of the 28th December, getting no answer from stations on the Minimarg side, we closed office and started off (as the fly did when he got out of the mustard pot). We opened out with the portable sounder at the Churwan village and found that the line was "Right;" and I was ordered to patrol towards Minimarg.

The next day, the 29th December, we parted, I wending my steps with most of the party Minimarg way, Mr. Comber returning to Gurais. It snowed heavily the whole day, and we had to plough a way for ourselves in about 5 feet of snow. That evening we reached the Kamri *dak* runner's hut, consisting of a room about 10' by 8', in which 13 of us had to crowd together like sheep. It was so hot inside that I made them keep the window open, but found, as soon as I turned over, they shut it again. I

scarcely had an hour's sleep that night, not the pleasantest of ways to spend one's birthday.

The next day from Kamri to Moponon we had to crawl almost the whole way over fallen avalanches, and I found it very difficult to keep a footing, it being so steep towards the river side. Every now and then I could hear the oldest of the party cautioning us not to talk above a whisper for fear of rousing the snow spirit, which causes avalanches to come down.

The next day we reached Minimarg. During this march we had to cross and recross the river several times, which is bridged over in many places by huge avalanches, caused by the force with which they come down, sending them up the opposite hill side. I here expected to spend at least a tolerable New Year's Day, but was doomed to disappointment, as I found that Messrs. Dalby and Smith were out on the line towards the Burzil pass, so was compelled to spend the most wretched and lonely day which has ever fallen to my lot trying to interest myself in a dry-as-dust novelette.

We left Minimarg the next day, returning to Gurais on the 4th January, after going through much of the same kind.

I had scarcely settled down to our everyday life in Gurais, when, on the morning of the 8th January, there was no answer again from stations on the Gilgit section, so, after making hasty arrangements for coolies, etc., and swallowing a hurried breakfast, we set off this time with the snow falling fast and in large flakes, and the wind blowing fine powdered snow into our smarting faces. Although I had returned by that road only four days before, the whole aspect seemed to have changed. The inhabitants say that avalanches are mostly to be dreaded when it is snowing heavily, or on a clear bright day, and this I've since had opportunities of observing in the Gurais valley. Naturally enough, they say that this winter there has been a most extraordinary snowfall, as avalanches have come down in many places where they have never been known to do so before, in fact not only down the *nullahs* but down the hillsides also,—but this is a digression.

So,—to return to the narrative,—just after we got beyond the Archuri village, at the extreme end of the Gurais valley, all signs of the road were lost entirely, and it was so precipitious that I had to cling on with my hands to keep from slipping down into the river. Here I noted a curious fact: the men have a certain way of planting the foot which prevents them from slipping; I used to turn my toes outwards when clambering up a hillside, but I noticed they turned theirs inward! thereby displacing very little snow, and when I adopted this style, I found I was able to get on much better. By this time the Churwan valley had 6 feet of snow, and, as it was still snowing heavily, all that night I

could hear large avalanches coming down with a noise louder than the loudest artillery or thunder one has ever heard, no doubt caused by the echoes off the surrounding high hills. The next morning broke with the snow still coming down fast in large flakes, and all the old men of the village entreating us not to go that day as the *lanis* (avalanches) were sure to come down on the road we had to go, and it was very *couf* (dangerous); but when they found I was determined to go, they allowed us to proceed with many a blessing and prayer for our safety. But oh! what a road! All traces of the former trodden path were quite obliterated, and from the start we were floundering up to our chests in snow. Well, after two hours of this, in which time we barely did one mile, we reached a deep *nullah*, and, as ill-luck would have it, a large avalanche just then came down, bringing large rocks and young pine trees 15 and 20 feet long: of course we immediately turned and tried to run, but the hindermost was just too late to get out of its course and was caught on the outskirts and dragged about 10 yards down and completely covered: fortunately the river here is about 40 or 50 yards away from where it goes down in a sheer precipice of about 30 feet: we had him out in a few seconds, but this warned me back as such a large avalanche is sure to loosen the jagged irregular masses piled 6 feet high, frowning down on all sides. So we returned to the village for the night, and the villagers although glad to see us back, had the good form not to remind us of their prophecies—

“Of all the forms of human woe,
Defend me from that dread, ‘I told you so.’”

The next morning it was still snowing heavily, so I got two strong young men from the village to go in front to make a path for the others to follow more quickly with the loads, and found we got on much quicker, as we had for a good way our yesterday's road. We reached the break that morning in about three hours' time, and found that a large tree had been brought down by an avalanche, which had caught the wire, wrenching it off three trees, and carrying it right down into the river. I immediately had the whole party to extract the two ends out of the *débris*, and joined and bracketed them on the same trees, but, as high as I could, out of the reach of future avalanches. The whole thing did not take thirty minutes, during which time no less than three avalanches came down, one snapping two young pine trees as if they were bits of dry sticks and one covering two of the *khalassies*, in which we lost one stop-rope, one insulator, and a pair of cutting pliers, which the men had set down while hauling at the wire. During the whole of this time our hearts were in our mouths, so to say, we thinking every moment might perhaps be our last, as it would have taken very little to loosen the masses hanging over us.

I next tried to roll up Gurais, but failed, as I am sure my earth was very bad, because, after digging up the snow, we were only able to scrape up a few inches of earth, it being so hard, crusted and rocky : even when I poured in two bottles of water I got on no better, so was obliged to move on till we came to a post with stays ; these act as very good earths. I have never known one of them to fail me yet up here. When I did get Gurais he told me the line was "Right" and to return, so I returned to the Churwan village for the night, that being the third night I was compelled to sleep there.

Let me try to describe the hut I occupied. The ground floor, which was about 12' square, was crammed with cattle and horses, and which I am sure was not cleaned out for at least a week before ; on the first floor where I slept, half was boarded-in to keep sheep and lambs, with one corner for fowls, $\frac{1}{4}$ of it was taken up for a fire-place (without chimney), with a place above it for drying grain, etc., and the other space consisted of boards 5' square raised 2' off the ground. Although one feels very tired and sleepy after struggling all day out in the snow, it is impossible to gain much sleep, on account of the horrible stench arising from below, lambs bleating, and the horns of the cattle down below knocking up against the wooden floor ; then, perhaps as you are just dozing off, you become aware of a cat prowling round your provision basket, so that you are constantly wakened. To crown all, a Kashmiri does not consider a rupee a night sufficient for the accommodation afforded by this miserable hovel.

But this was not all, for I brought something away with me, which I think they would have been glad of if they only knew it.

For days after I returned to Gurais, which I did the next day, I felt very uncomfortable about the body : at first I thought it was some kind of rash or scurvy breaking out, on account of living so largely on tinned provisions, so I first physicked myself, then started taking a certain quantity of limejuice daily, but this did not tend to alleviate the intense itching sensation. So although I had a bath (no easy matter here with the temperature below zero and the zinc bath one solid block of ice) on the day before I went out, I determined to have another, and horrors ! I feel ashamed to mention it, but, as I am simply stating facts as they occurred, I must admit that I was full of lice ! Well, I thought the Bhutias and Lepchas of Sikkim were the most dirty lot of people one could wish to come across, but they are "nowhere" compared with the Kashmiris up here, in that respect.

We have not been able to keep up thermometer readings, as the capacity of the ones supplied is not great enough, the steel bar preventing the mercury from rising above zero.

The snow at present is 5' 10" deep, but a considerable portion has been blown away by the strong wind which prevails night and day.

Telegraph Master W. J. Comber's narrative.

The following narrative will, I hope, suffice to convey an idea of what "Interruption duty" means during the winter months in this country. The winter begins about the middle of October and lasts till the end of March, but the roads are not open for traffic before June on account of the passes being still blocked with snow. The severity of the winter can only be understood by those whose lot it is to be quartered here. This winter the snow-fall has been exceptionally heavy, in fact such a winter has never before been experienced; it has been a splendid test for the line, which on the whole has stood the severe test fairly well. The majority of "Ins" were due to unforeseen circumstances, *viz.*, avalanches coming down in places where they were never known to come down before, taking the posts and wire along with them, thus leaving large insulated gaps: this was the cause of the four breaks between Gurais and Bandipur during the interruption, 10th to 16th January 1895. The posts and wire were buried deep under the *débris* and it was simply impossible to get at them. I could have cut short lengths of wire out, but it would have been of no use. The wire, etc., is still there and will be collected when the snow melts. The field cable supplied us proved invaluable. I went on bridging these breaks over with the cable until communication was restored, and did the repairing on my return journey; this saved a great deal of time and, besides, allowed time for material to be sent out from Gurais. The duration of these "Ins" would appear very long (considering the distance between each section) to those who are not aware of the circumstances under which the party has to labour: to begin with, wading through soft snow up to our hips and at times up to our waists is very fatiguing, to say the least of it, consequently halts have to be made every three or four hundred yards; the leader then drops to the rear and the next man takes his place, and so on in turn at times. I have been compelled to engage a man to do nothing but make a path and lead the party. The men from this part of the country do well for line work during the winter; they stand a great deal of exposure, but they are inclined to be awfully lazy and require driving at times. Between Koprinajan and the Tragbal pass avalanches may be expected anywhere and at any time. This is the chief bugbear which instils mortal fear into the natives, and indeed they have good reason to dread them. They come down without giving you a moment's warning, and, if you happen to be in their

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age depth of snow between Gurais and Zotkushu
 pass) is between 6 and 7 feet. An old man at the
 age told me he was about 35 years in this part of the
 ty, but he had never experienced such a severe winter.
 ese people never leave their villages during the winter months.
 Between June and October, they are very busy making provision
 for the winter months, after which nothing will induce them
 to leave their villages. They express great surprise at seeing
 us out, and when we leave their villages in the morning it's always
 with their blessings that we may reach our destination safely.

One casualty has occurred already: the office sweeper suc-
 cumbed to pneumonia on the morning of the 6th instant, and a
 substitute cannot be persuaded to venture across the pass.

Signaller C. J. Smith's narrative.

I have the honour to submit a detailed report of the cause
 of the interruption that occurred between Minimarg and Astor
 on the night of the 9th January 1895, and the repairs effected
 thereto.

path, nothing will save you; the faster you run in soft snow the deeper you sink. We were very fortunate in escaping this, though we witnessed a good number coming down before us and behind us. The natives believe that mere talking is sufficient to disturb the masses of snow above. It's amusing to see a man moving along with slow measured steps, solemn face and total silence that's maintained: one would fancy he was following a funeral procession, but this monotony is occasionally broken when suddenly some snow is displaced from above: the cry then is "*Lini-hoo*" (avalanche run), and there is a general start. At first it was rather alarming, but I soon got accustomed to these false alarms and tried to quell their fears by laughing at them, but they could not be persuaded to take my view of it. Another great inconvenience to contend against is the awful cold and the piercing wind which no amount of warm clothing seems to ward out: the average cold during the day is between 25° and 28° below zero; at nights it goes several degrees below zero. The thermometer registers its minimum, which is 40° below zero. The trees are frozen hard, and it is a difficult task to drive nails into them or lop off branches. After 4.50 p. m. I was obliged to stop work: the sun dips down behind the mountains, the cold becomes unbearable, so much so that the noses and backs become frozen and stiff like boards. The wind drives snow eddies more or less from headlaches caused by the extreme cold. One of the linemen got a touch of snow blindness, but it was cured after a couple of days. After the day's work the most important thing done is to look out for shelter for the night, which is then maintained at a village. These villages consist of huts of mud and constructed so as to accommodate men and beasts in a separate manner; and it was my sad lot to share the same shelter allotted to the beasts (sheep, cows, ponies). The men and women were being Mahomedans, and I am with the Christians. I had a good fire to warm and I fry themselves; but the women have no fire. I was asked if I would raise a fire, but I refused to do so. I have had a sad experience of what being burned is like, and if any one wishes to remain in this sort of country, it is better to have our hut on the Traghal pass or in the Traghal valley. I was told that both these huts were very probably intended to be built on the wrong end, but unfortunately they seem to have a knack of turning out on the wrong end. When, to return to my lodge, the only alternative left me was to sleep outside, so I chose to sleep inside, with all its evils and slept inside. I did not mind the bad company I was in so much, but I strongly objected to be worried by cats, dogs, and rats, and these were very numerous. The huts lose its centre of gravity, or to come down my nose, the huts in particular seemed to think it best as possible, and they were very

had, but with the aid of my *khud* stick I soon convinced him of the contrary. My *tiffin* basket seemed to have been the chief bone of contention: it was besieged all night long by the above-mentioned cats, rats, and dogs. I assure you I had a sorry time of it, lunging out in all directions to keep off the enemy. However, such accommodation is not calculated to allow one to oversleep oneself in the morning. On the contrary, I was glad to get out as early as possible to breathe purer air. I prefer knocking about in the snow all day to spending a night in such dens.

A word about the snow shoes and skates may not be out of place. None of them have answered the purpose for which they were supplied. I could not persuade the line party to go out in the shoes supplied to them: they prefer the grass shoes worn in this country. They have the advantage of being about a quarter of the weight of the wooden shoes, and snow does not adhere to them at all, whereas it does to the wooden shoes. The Canadian shoes sink about a foot in three feet of soft snow, and, unless you raise your foot about 14" each slip you take, the shoe gets full of snow, and besides the shoe being so long and fully wide, you are obliged to adopt a special gait when using them. A great deal of practice is required before they can be used on the line with confidence. The Norwegian shoes do very well when the snow is a bit hard and the country tolerably level, but climbing with them (as we have to do) is next to impossible. They are a great source of amusement to us when at home, as we spend many a dull hour on them.

The average depth of snow between Gurais and Zotkushu (at foot of pass) is between 6 and 7 feet. An old man at the Nael village told me he was about 35 years in this part of the country, but he had never experienced such a severe winter. These people never leave their villages during the winter months. Between June and October, they are very busy making provision for the winter months, after which nothing will induce them to leave their villages. They express great surprise at seeing us out, and when we leave their villages in the morning it's always with their blessings that we may reach our destination safely.

One casualty has occurred already: the office sweeper succumbed to pneumonia on the morning of the 6th instant, and a substitute cannot be persuaded to venture across the pass.

Signaller C. J. Smith's narrative.

I have the honour to submit a detailed report of the cause of the interruption that occurred between Minimarg and Astor on the night of the 9th January 1895, and the repairs effected thereto.

Owing to an incessant heavy snowfall, and the influence of the weather, my party, which consisted of one *thakur* and two *thakurs*, could not leave Minimarg till the 12th January.

On the morning of the 12th, we left at about 6.30 A.M. for Burzil Chowki. We were accompanied by a few *thakur* runners, who were going on to Burzil Chowki to relay a line of Kashmiri runners. The snow on the ground was very soft, and men found it very fatiguing having to make their own tracks with loads on their backs. To make marching easier for them, I employed two *thakur* runners, who had no loads to carry, to lead a train of the *thakur* men with light loads, next, men carrying heavy loads, and finally we had the last, notwithstanding all these precautions, the plough was deep in snow. About 1½ miles from Minimarg, an insulator was found off its bracket. Replaced it. Two posts further on a huge avalanche had swept away two posts, the line had been buried in deep snow. We found part of a post and insulator in the valley below, and as a temporary measure, raised the line a little higher up from the spot where it originally was, and attached the line to it. This part of the line was spanned over on the 19th January, a day after our return to Minimarg. Four posts further on an insulator was found off its bracket, replaced it. Six posts further, another insulator was found off its bracket. Replaced it. About four miles from Minimarg, the line runs from a tree on to a post, then crosses a stream on to another post on the opposite bank, a large tree had been knocked over. An avalanche had knocked down the post, the tree and *bamboo*, the line was broken and about 100 yards were buried in deep snow. We succeeded in recovering 200 yards of wire after a great deal of digging and tramping. The line was spanned over by tightening the wire. The length of the span is over 200 yards. About ½ mile from this point, two posts were carried away by a huge avalanche, and the line was broken. As darkness was fast approaching, we had to defer our return till the next day, and hurry on to Burzil Chowki where we arrived at about 2 P.M. Fog in the evening, and snowed both sides, but got no answer from either side. The following morning (13th January) I got Camp Major Mr. W. R. Dancy. We returned to the tent found the previous evening, and spanned it over. At dawn, on the 14th January, I left for Burzil Par where we arrived in the evening. The distance between Burzil Chowki and Par was in excess of 100 miles, but Burzil Par early on the 15th morning. About 10 miles from the Par one post was carried away by an avalanche. The line was broken and the cars had to be replaced. We replaced on both ends, and spanned over the break by tightening the wire. One and a half miles further on, two posts were swept away.

by a huge avalanche, the line intact was buried in snow. This part was spanned over by tightening the wire. Four posts further, we found one post knocked down by an avalanche, and the line intact buried in snow. We spanned over this part. We arrived at Sirdar Koti in the evening. About two hours after our arrival at Sirdar Koti, Higgins' party arrived. We left for Minimarg the following morning, 16th January. I opened office at Burzil Chowki on the 17th afternoon, got Astor at about 14-30, but no answer from Gurais side. As Astor had not received the messages posted to him from Minimarg, and as I had duplicate copies with me, I signalled them to their respective stations. We arrived at Minimarg on the afternoon of 18th January.

Signaller J. E. W. Higgins' diary.

On 10th January left Astor in a snowstorm, passed several small avalanches on the road. Snow about 2 feet deep. Arrived at Gankot in the evening, 6½ miles.

11th.—Proceeded to a village called Moikial, only a distance of 3½ miles; progress retarded owing to its snowing very heavily with a g wind. Continued snowing all evening.

12th.—Was glad to find that it had cleared up some time during the night; this enabled us to march to Godhay, 6 miles. Stiff work for the coolies in the soft snow.

13th.—With a little encouragement I managed to get the men on to Krim, 9 miles. Crossed a few small avalanches and one very large one just after starting, which was not less than 80 yards wide, opposite bank of river; falling across the river it also worked its way up to the road on this side and blocked the flow of the river for 3 days. Snow about 3 feet deep. As we gradually ascend, one feels it becoming colder and colder. The thermometer, I feel certain, is not many degrees above zero in the daytime and a good many degrees below that point at night. The wind is felt very much, and it blows the dry snow about as one is accustomed to see the sand blown about. The water for my battery I had carried in a bottle and kept in a coolie's bosom to prevent it from freezing, but on opening out and setting battery up, it would hardly be two minutes before it would be frozen hard.

14th.—Marched to Chillam, 8 miles. Hard work. The avalanches on this section are not many and easily avoided by walking closer to the river. Fortunately *dak* runners had made a pathway from Krim to Das, but beyond this the wind had obliterated it. Snow 3 to 4 feet. Up to Chillam the line was perfect, the position of the posts avoiding the course of the avalanches nicely.

15th.—Marched to Sirdar-ki-Koti, 6 miles. Had to use a lot

path, nothing will save you ; the faster you run in soft snow the deeper you sink. We were very fortunate in escaping them, although we witnessed a good number coming down before and behind us. The natives believe that mere talking is sufficient to disturb the masses of snow above. It's amusing to see the party moving along with slow measured steps, solemn faces and the dead silence that's maintained : one would fancy he was following a funeral procession, but this monotony is occasionally broken, when suddenly some snow is displaced from above : the cry then is "*lani baya*" (avalanche run), and there is a general stampede. At first it was rather alarming, but I soon got accustomed to these false alarms and tried to quell their fears by laughing at them, but they could not be persuaded to take my view of it. Another great inconvenience to contend against is the awful cold and strong piercing wind which no amount of warm clothing seems to keep out : the average cold during the day is between 25° and 28° ; of course at nights it goes several degrees below zero. The office thermometer registers its minimum, which is 10° below zero. The trees are frozen hard, and it is a difficult task to drive galvanized nails into them or lop off branches. After 4-30 P. M. I was obliged to stop work : the sun dips down behind the mountains and the cold becomes unbearable, so much so that the clothes on our backs became frozen and stiff like boards. The whole party suffered more or less from headaches caused by the extreme cold, and one of the linemen got a touch of snow-blindness, but it were off after a couple of days. After the day's work the next thing to be done is to look out for shelter for the night, which is usually obtained at a village. These villages consist of four or five huts, and constructed so as to accommodate man and beast indiscriminately ; and it was my sad lot to share the accommodation allotted to the beasts (sheep, cows, ponies). The linemen and *khulasies* being Mahomedans clubbed in with the villagers and had a good fire to warm and dry themselves ; in fact they were well off. I was asked if I would like a fire, but I replied in the negative. I have had a sad experience of what being "smoked out" means : if any one wishes to realise this sensation let him spend a night in our hut on the Tragbal pass or in the Gurais hut. The chimneys of both these huts were very probably intended to let out the smoke, but unfortunately they seem to have a knack of letting it out at the wrong end. Well, to return to my lodgings, the only alternative left me was to sleep outside, so I chose the lesser of the two evils and slept inside. I did not mind the bad company I was in so much, but I strongly objected to be walked over with impunity by cats, rats, and dogs, and occasionally a fowl from the roof would lose its centre of gravity and come flop on my face. One dog in particular seemed to think he had as good a right to my bed as I

had, but with the aid of my *khud* stick I soon convinced him of the contrary. My *tiffin* basket seemed to have been the chief bone of contention : it was besieged all night long by the above-mentioned cats, rats, and dogs. I assure you I had a sorry time of it, lunging out in all directions to keep off the enemy. However, such accommodation is not calculated to allow one to oversleep oneself in the morning. On the contrary, I was glad to get out as early as possible to breathe purer air. I prefer knocking about in the snow all day to spending a night in such dens.

A word about the snow shoes and skates may not be out of place. None of them have answered the purpose for which they were supplied, I could not persuade the line party to go out in the shoes supplied to them: they prefer the grass shoes worn in this country. They have the advantage of being about a quarter of the weight of the wooden shoes, and snow does not adhere to them at all, whereas it does to the wooden shoes. The Canadian shoes sink about a foot in three feet of soft snow, and, unless you raise your foot about 14" each slip you take, the shoe gets full of snow, and besides the shoe being so long and fully wide, you are obliged to adopt a special gait when using them. A great deal of practice is required before they can be used on the line with confidence. The Norwegian shoes do very well when the snow is a bit hard and the country tolerably level, but climbing with them (as we have to do) is next to impossible. They are a great source of amusement to us when at home, as we spend many a dull hour on them.

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On the morning of the 12th, we left at about 6-30 A. M., for Burzil Chowki. We were accompanied by a few new *dak* runners, who were going on to Burzil Chowki to relieve the old Kashmiri runners. The snow on the ground was very soft, and the men found it very fatiguing having to make their own track, with loads on their backs. To make marching easier for them, I ordered two *dak* runners, who had no loads to carry, to beat a track, then followed men with light loads, next, men carrying heavy loads, and I followed at the last: notwithstanding all these preparations we had to plough waist-deep in snow. About $1\frac{1}{4}$ miles from Minimarg an insulator was found off its bracket. Replaced it. Two posts further on, a huge avalanche had swept away two posts, the line intact was buried in deep snow. We found part of a post amongst the *débris* in the valley below, and, as a temporary measure, re-erected it a little higher up from the spot where it originally was planted, and attached the line to it. This part of the line was spanned over on the 19th January, a day after our return to Minimarg. Four posts further on an insulator was found off its bracket. Replaced it. Six posts further, another insulator was found off its bracket. Replaced it. About four miles from Minimarg, where the line runs from a tree on to a post, then crosses a *nullah* on to another post on the opposite bank, a large break had occurred. An avalanche had knocked down the post between tree and *nullah*, the line was broken, and about fifty yards of it were buried in deep snow. We succeeded in recovering both ends of wire after a great deal of digging and trouble. This part was spanned over by tightening the wire. The length of the span is over 200 yards. About $\frac{1}{2}$ mile from this fault, two posts were carried away by a huge avalanche, and the line buried in snow. As darkness was fast approaching, we had to abandon repairing this fault till the next day, and hurry on to Burzil Chowki, where we arrived at about 20-15. I opened office at 20-30, and rolled both sides, but got no answer from either side. The following morning (13th January) I got Camp Moponon (Mr. W. R. Dalby). We returned to the fault found the previous evening, and spanned it over. At dawn, on the 14th January, we left for Burzil Pir, where we arrived in the evening. The line between Burzil Chowki and Pir, was in excellent order. We left Burzil Pir early on the 15th morning. About three miles from the Pir one post was carried away by an avalanche, the line was broken and the ends buried in deep snow. We recovered both ends, and spanned over the break by tightening the wire. One and a half miles further on, two posts were swept away

by a huge avalanche, the line intact was buried in snow. This part was spanned over by tightening the wire. Four posts further, we found one post knocked down by an avalanche, and the line intact buried in snow. We spanned over this part. We arrived at Sirdar Koti in the evening. About two hours after our arrival at Sirdar Koti, Higgins' party arrived. We left for Minimarg the following morning, 16th January. I opened office at Burzil Chowki on the 17th afternoon, got Astor at about 14-50, but no answer from Gurais side. As Astor had not received the messages posted to him from Minimarg, and as I had duplicate copies with me, I signalled them to their respective stations. We arrived at Minimarg on the afternoon of 18th January.

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12th.—Was glad to find that it had cleared up some time during the night; this enabled us to march to Godhay, 6 miles. Stiff work for the coolies in the soft snow.

13th.—With a little encouragement I managed to get the men on to Krim, 9 miles. Crossed a few small avalanches and one very large one just after starting, which was not less than 80 yards wide, on opposite bank of river; falling across the river it also worked its way up to the road on this side and blocked the flow of the river for 3 days. Snow about 3 feet deep. As we gradually ascend, one feels it becoming colder and colder. The thermometer, I feel certain, is not many degrees above zero in the daytime and a good many degrees below that point at night. The wind is felt very much, and it blows the dry snow about as one is accustomed to see the sand blown about. The water for my battery I had carried in a bottle and kept in a coolie's bosom to prevent it from freezing, but on opening out and setting battery up, it would hardly be two minutes before it would be frozen hard.

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15th.—Marched to Sirdar-ki-Koti, 6 miles. Had to use a lot

of persuasion to get the local coolies to do this bit. They tried their best to get out of it by feigning sickness and making excuses, although I had their loads as light as it was possible to make them. From Chillam some fuel has also to be carried or else go without a fire at Sirdar-ki-Koti ; this would be an experience one would not care to go through, if it could possibly be avoided. It was in this section, a nasty one for avalanches of all sizes, where I found the line had been damaged.

The first fault was a post carried down by an avalanche and wire buried ; I had the post carried up and re-erected in the hard compact snow of the avalanche as a temporary measure, as the break could not be spanned by tightening the wire : this was about a mile from Chillam. After finishing this pushed on to the fault, an insulator blown off bracket and wire, and resting on a stay. Got the ladder up, and the lineman Rusmit Khan, while replacing the insulator, had the small finger of his right hand slightly frost-bitten. A little further on we came across a very big break caused by an avalanche, about 300 yards wide. There were no signs of wire or posts, and we could not span this as I only had a half bundle of cable with me, having been obliged to leave the other half at Chillam, so as to lighten the loads.

As it was by this time getting late, I had to push my men on as fast as possible, but progress was slow, and it was very tiresome work. About a mile from Sirdar-ki-Koti we came across another fault, where a post had been carried down by the avalanche and the wire snapped, but it was too late to do anything that day. Reached Sirdar-ki-Koti at quarter to nine, was very glad to meet Mr. Smith with his party from Minimarg. All well.

One servant and two of my local coolies got frost-bitten slightly on the feet that night.

Sirdar-ki-Koti is a dreadful place to stop in : it does not contain a single door or window, and the walls are almost without plaster ; the wind howls through the building all night, and it is bitterly cold.

16th.—Parties bid each other “good-bye” and started on return journey. I took over from Mr. Smith half a bundle of cable for the big break. Spanned last break by tightening up and jointing wire, then pushed on to the big break to see if I could manage to span this with cable, but failed as cable was too short. Got to Chillam all right that evening.

17th.—Took out other half of my cable and had big break joined up. Returned to Chillam and was very glad to find through communication right.

18th to 22nd.—Returning to Astor.

The natives use, what one might call, “grass sandals” for walking over a beaten track, but for soft snow they use a rough kind

of snow-shoe made of sticks, tied to a circular piece about 18" across, with pieces of hide. The feet are thickly clad in "Puttoo," over which they draw a large pair of rough socks made of goat's hair. I find this covering answers well, and *with the aid of Canadian snow-shoes* I was able to progress fairly well over soft snow. No doubt, something is still desired as an improvement on the Canadian pattern, as, after a fresh fall, one frequently sinks about a foot and a half; this in addition to keeping one's centre of gravity is tough work. Of course, the damp foot-gear must be changed at the end of a march.

I asked the natives of Krim what made them settle in such a country as this; they said "*Sahib*, it's *kismut ke bat*. Our forefathers looked about and found the better place occupied, so were obliged to settle here, and we have therefore to put up with it." I pity them. The snow lies at Das and Krim for about 6 months. Drew says that this cultivated ground is probably the longest under snow in the world. About the avalanches, they say that they always come down after heavy snow-falls; but those that come down in the spring when the thaw begins are more compact and much harder, and are more dangerous.

The Kashmiris who are employed as *dak* runners along the road (but not on the Pass as they proved a thorough failure there), are only waiting anxiously for the Pass to open, when they are nearly all determined to go back to the "valley." Several of them have been frost-bitten, and one man quite amused me by shewing me a lot of skin which he collected from his feet, which he has carefully collected in a piece of cloth and is keeping as a relic.

There is one runner here, who was very badly bitten; he has been in hospital over three months and is not cured yet. I saw some local men who had been bitten, when I was at Chillam; they are afraid to come in to hospital fearing that their toes will be amputated. They seem to think their feet will get all right when the summer comes round.

Another danger besides frost-bite and avalanches is the frequent rolling down of boulders, which, on the snow thawing a little, get loosened from the hillside and come down at a terrific pace. I have had a couple pass by close to me, and one can't help thinking of the effect they would have upon one's anatomy if one happened to be struck by one of them. I hear, however, that accidents of this kind are not of frequent occurrence.

I doubt if there is anything I can suggest, after the thorough study the Divisional Superintendent of Kashmir has made of the whole country, and I have no doubt that the line will stand well, as soon as the necessary alterations are carried out next summer. Perhaps it would be well to try a different pattern of snow-shoe next winter, and if an improvement is made, it would facilitate a

more rapid restoration of communication.

In conclusion, I may add that one cannot help feeling thankful for the manner in which our comforts were studied, and the efforts made to assist us in passing away our isolation in these parts.

It also gives me much pleasure to see that the Director General has appreciated our efforts to keep up communication, also for the kind wishes for our safety expressed in his telegram of the 22nd January, 1895, to the Divisional Superintendent, Kashmir Division.

Telegraph Master G. A. De Silva's narrative.

Before starting this narrative, it would be well to at first enlighten you as to the decision Mr. Higgins, the signaller attached to this office, and I had come to with regard to the person who was to go out in charge of the repairing party whenever an interruption occurred between Astor and Minimarg during the winter. It was settled mutually that Mr. Higgins should go out on the first occasion. He accordingly had to sally out on 28th December, when the first interruption occurred between this and Minimarg; a storm which had passed over Astor towards the Burzil, the previous evening, had apparently caused the interruption. The fault was found and repaired by the Minimarg party.

Scarcely had Mr. Higgins returned, when the line was interrupted again. This fault occurred on the morning of 8th January. Heavy snow commenced to fall here on 6th and continued till 12th, with a slight break on 8th.

As it was my turn to go out, I started getting ready for the expedition. I had quite made up my mind to go as far as, or farther, than, the Burzil pass, if there was necessity for it. I then wrote to the Tehsildar for coolies, who were required to assist the *khalassies* in carrying the rations, stores, and all requisites for the party. I was under the impression that the line was down close to the Burzil, so rations, to last the party for at least 10 days, were got ready.

The cold here was rather intense as the thermometer that morning stood at 9°.

The foot-gear consisted of two pairs of thick socks with sheepskin shoes, the latter keeping the feet very warm. Sheepskin gloves of our own manufacture were worn, as fur-lined gloves were not procurable at that time of the year. My party also wore sheepskin shoes and gloves.

The coolies turned up at about 10-30 A. M., when we put on our grass-shoes (poolahs) and sallied out to restore communication.

The grass-shoes are preferred to the snow-shoes supplied by the Department, as they are much more comfortable to walk with, especially in snow two or three feet deep. I leave it to Mr. Higgins to give his opinion as to which sort of snow-shoe is preferable in very deep snow.

As I had mentioned before, I had fully made up my mind to go as far as, or further than the Burzil, you can imagine what must have been my surprise when I found the line broken only $2\frac{1}{2}$ miles from the office.

Before I reached Bullan, the village where the fault occurred, an avalanche came down just as I passed the spot. This avalanche was only about 6 feet deep, as I examined it on my return. The cause of the interruption was apparently due to another avalanche having come down, about 10 yards further on, the previous night, bringing with it a few boulders, the largest of which was on close examination found to be about 10 feet in girth (not 5 feet as previously reported), and which had come rolling down to all appearances with great force, as it broke the stay-wire and smashed the post, snapping the line wire in consequence. The upper portion of the post, as well as the stay-wire, had disappeared, probably buried in the snow. The avalanche was about 8 feet deep where the post stood. After erecting a new post from a *bully* obtained from the village, and joining up the wire, I found on connecting my "portable sounder" to the wire, that the line was right to Minimarg: I consequently retraced my steps, as I thought it unnecessary to proceed to meet the Minimarg party.

The villagers of Bullan gave me to understand that the avalanches that come down early are more dangerous than the ones that come down at about the beginning of spring. This statement seems preposterous, as the remnants of the avalanche that I saw in the river between the Tragbal and Gurais, in July last, were enough to convince me of the magnitude and destructiveness of the avalanches that sweep down into the valleys in spring. It may be the idea as regards Astor itself, because the avalanches that come down here are of no consequence. The men also informed me that two of the villagers were overwhelmed by an avalanche two years ago, as they were crossing the *nullah* down which the avalanche, which caused the interruption, had worked itself into the valley.

The people of Astor say that this winter is a severe one, as bad as that of last year. The snowfall in Astor, as registered by me, measures up to date 75.5 inches. The temperature was never over 12° in December and January, and the minimum thermometer indicated 2° below zero on the morning of 27th January. Mr. Higgins must have found it very cold at Sirdar-ki-Koti, the height of which place is no less than 12,500 feet above sea

level, as the thermometer here showed only 3·2° on the day that he was at Krim, which is not so high as Sirdar-ki-Koti.

The life we have here is very monotonous, hence we appreciate the kindness of the Department in placing two men at each station : when one of us (at Astor) goes out, the other is busily engaged with the office work, as on the two occasions that I was left alone, I have had to keep open for Gilgit and Bunji traffic, which amounted to very nearly 100 messages at each time. The accumulation is cleared off as soon as the line is right, in case the messages that are sent by post do not reach their destination. As the postal arrangements have been a failure this winter, the messages only reached Minimarg and Gurais about a fortnight after the telegraphic communication was restored.

A thoroughly good outfit is necessary for the winter, as the cold is very severe, and if one is not properly clad, the inevitable result would be pneumonia, bronchitis, or frost-bite : with the strictest economy the outfit will cost not less than Rs. 100. It would be advisable for one going out on an expedition towards the Burzil, to take a couple of packets of chocolate Menier for each day's march.

One who has experienced a winter on these snow-clad mountains would not willingly like to have a repetition of it, at least for two consecutive years at one station. The life spent in these regions is simply an exile, and one longs to get back to civilization. The local produce is inadequate to meet the demand, so one finds great difficulties in procuring food-supplies.

As my trip was cut short by the fault having been found so close to Astor, I am not in a position to describe the state of the country beyond Bullan. If circumstances had demanded my going as far as the Burzil, my narrative might have been replete with the adventures usually encountered on an expedition in winter to this much dreaded pass.

Telegraph Master W. R. Dalby's narrative.

Being requested to furnish in "narrative form" the details of interruption duties with things of interest connected therewith, I take this opportunity to attempt a description of a synopsis of Minimarg (Ming.) in some of its various aspects.

Minimarg and environs.—Situated south-west of the Burzil, 10½ miles from the summit of the pass, on a plateau, with an area of about 250 × 900 square yards. A village comprising two huts, with four small families is the entire population of the place. The Gilgit road runs about 350 yards from the office round the hill opposite. The altitude of Minimarg is stated to be about 9,800 feet above sea level.

The office accommodation.—Is very limited when the fact of its having to contain provisions for 13 men for a period of 12 months, and 2,640 maunds of firewood, is considered. In consequence of this defect, I have had to erect a shed of comparatively considerable dimensions, a fowl-house, a ration stand (to economise space), a dozen long shelves, a small dispensary table, four cupboards, etc.

There is ample room for improving the fire-place chimneys which, on account of the continual contrary winds, functionalize but indifferently, causing a deal of inconvenience from the dense smoke which pervades the place with suffocative effect. To open the doors for its exit is to subject the room to the violence of the winds, with a profuse scattering of ashes. The four *nullahs* opening on Minimarg are sources of inexhaustible cutting breezes, creating an Æolian hum day and night, with varying weird sounds and an occasional tremor of the whole building not unlike a series of small earthquakes.

Servants.—Peon, waterman, sweeper, two linemen and six *khalasies*. From the 1st December 1894, six extra *khalasies* have been temporarily engaged because they cannot be had whenever required, and the Postal Department monopolises all the available manual labor. These latter six men required coercive measures for their enlistment, and ten minutes of vigorous, Draconic exercise on my part enabled me to harness them.

The precaution taken to keep two linemen attached to this office has proved to be a very good idea. Satisfied and impressed, as the servants are, with the lavish kindness of Government, yet they have unanimously decided that one winter in Minimarg is equivalent to a lifetime of winters in a more rational place. With the characteristic independent disposition of the Pathan they soon learned to respect the decrees of Government after their refractory ideas had received an extinguisher: they are now a set of the most willing and venturesome men Government could expect to have in the service.

The ration arrangements.—Are very satisfactory, excepting a few items which it would be well to bring to notice for the benefit of those who may have to occupy Minimarg in the near future. The Bombay biscuits may be curtailed to one-half the supply. Ditto the pickles and army rations, and in lieu of which bully-beef would be a most welcome change, as army rations for breakfast and dinner for six whole months become positively intolerable, producing frequent headaches and nausea to say nothing of any occasional change the palate requires. For lime-juice may be substituted its equivalent value of bad Commissariat rum for use on the line. The latter "swap" arises from the quantity of spirits I have to carry out on the line for the benefit of the native establishment. Mountain

sickness, coma, coughs and colds always attend a stiff climb, and all that I have, in place of something better, are *tinctura zingiberis* and essence of peppermint, with a dash of ten grains of quinine for a dose.

The rest of the rations are all right, if permitted to remain so.

Of course it is too well known that, if Government do not supply the necessaries for the maintenance of life, existence in this benighted place is simply impossible.

When we are cut off completely from the outer world and "joined up direct," a more acceptable gift would have been a couple of newspapers in the place of the novels which were so kindly given us.

In mentioning these few changes, I very sincerely trust that *inaptitude* may not be associated with the motive. We are grateful indeed for the tender mercies shown us in a place which has its nearest shop 100 miles away, and the financial ruin that must inevitably follow by patronizing the said shop. We have not seen, much less tasted, fresh meat, vegetable, or milk for 5½ months. Bread is out of it altogether; "chapaties" have become so insipid that we have entirely discounted their value.

Our occupation within doors.—Is of a sedentary nature. My colleague and collaborator, Mr. C. J. Smith, takes his seat alongside of me basking near the fire, stretches his legs on to the chimney wall, stares at me with unmistakable disgust, goes into the next room with no fixed object, looks about him and returns only to repeat the operation *ad infinitum*. Whatever in his thoughtful moments is going on in the mental region must be of a nature which promises great prospects, or his faculties are being touched by the "premonitory symptoms of incipient epileptic vertigo"! Men of stronger minds have probably collapsed with a shorter period of weary solitude.

We have exhausted every topic which poorly educated minds could dissertate upon. We ransacked and laid bare the very fibres of which the various sciences are built. Threshed out all we know about ourselves, our *former* abilities and accomplishments and, through the medium of a very casual remark, have now realized certain facts and suddenly betaken ourselves to—washing clothes. The tediousness of this particular occupation will be readily seen when we have first to scoop out lumps of ice and snow, ram them into an empty kerosine tin, melt them over a fire in the chimney, and after this process—which occupies time in proportion to the intensity of the heat—get what other respectable people have always at their elbows and in bulk *quantum sufficit*. Every use to which water is put takes its immediate origin from solid blocks of ice and snow. According to medical belief "*aqua distillata*" is productive of goitre, when resorted to for any length of time.

Mr. Smith, on hearing this alarming piece of intelligence, has since taken to personally supervising the boiling of drinking water, which must reach boiling point. Smith had, during autumn, got up a fretwork machine which hitherto found a resting-place in some snug corner, until a week ago when the conversation turned upon "Dementia," and he suddenly remembered the machine and is now sedulously engaged fast wearing away its working parts.

Line Duty December 4th.—Left Minimarg on patrol duty to Astor. Returned 24th.

December 28th.—Interruption, Minimarg-Astor. Left Minimarg at 11 hours with Smith, two linemen, and nine *khalasies*. The snow was very soft and deep, and for six miles there was a steady fall. Arrived at Burzil Chowki at 20-15 owing to having left Minimarg so late.

Two men enlisted at Astor collapsed at the 5th mile, and could not proceed.

The night was dark, and we had to keep up an occasional shout to indicate the whereabouts of the leaders of the party.

Smith, while crossing a snow-bridge, tumbled into the stream and, in order to keep pace with the party, held on to another man's neck! Arrived at Burzil Chowki, the men deposited their loads and returned to the assistance of the two men left behind. They reported that these men refused to attempt to move and asked to be left behind to die!

They were secured with ropes, partly dragged and partly carried in.

Opened camp office and worked Srinagar, Kashmir.

29th December, 10 hours.—Wired to Divisional Superintendent :—"Waited last five hours for lull in storm, which continued all last night. No signs of abatement yet. If does not clear by 11 hours, cannot leave to day. Twenty-six inches fall."

At 18 hours wired again to Divisional Superintendent :—"Leaving for Burzil (Bzl.) Pir to-morrow at 5, weather permitting; still snowing heavily."

30th December.—Wired to Divisional Superintendent at 8-15:—"Just returned. Regret party unable proceed. Waist deep in snow. Fall too heavy and soft. Stiff breeze. Coercion tantamount to homicide. Must start to-morrow any cost, if continues clear to-day."

The party proceeded half a mile and had to return. I then ordered a march for two miles without loads, in order to beat a track. This was done.

31st December, 5-30.—Left for Burzil Pir. Arrived at 17-45.

This is not a telegraph hut: we have only one and it is on Tragbal, H. S. O. The telegraph wooden cabin half way is a miserable apology for a place of refuge. If a snowstorm came on and continued throughout the night, the idea of 13 men with loads and line

tools being cooped up in a room 8' x 10' is simply appalling. This place is called Waitor. The distance between it and Burzil Pir is three miles ; and a good healthy three miles it is. The breeze here is terrific in its sweeping passage.

It was during a temporary lull when Smith, unable to contract his lips into whistling shape, hummed a tuneful air, presumably as a sort of joyous thanksgiving. The humming abruptly ceased. Certain sounds, which strikingly resembled inelegant language, struck my ears. On turning round, I saw a bearded head with icicles like jewelled pendants suspended from the chin, and a pair of hands frantically swaying about, just above the snow level. The truth is that Smith suddenly disappeared owing to the abridgement of snow over a hollow, which in summer is a running stream, having given way, under a clumsy footfall. I have known Smith, at intervals for the past 18 years, and never heard him indulge in strong epithets such as on this occasion burst their bonds from a long-confined imprisonment.

He was extricated from his humiliating position, and then commenced a most eloquent harangue dressed in language of firmness and determination to return to India at any cost.

Arrived at Burzil Pir we divested ourselves of snow and icicles, and proceeded to make the best of a bad prospect.

New Year's Day.—Left Burzil Pir at 6 A. M., and arrived at Sirdar Koti through a heavy snowfall. The last mile particularly was very trying, and we were compelled to leave off inspecting the line and make haste to the bungalow, where we arrived at 16-40 with blinding snow driven into our faces by the violent winds.

2nd January.—Reinspected line, one mile.

Extract from notes.—"Alteration of alignment made last year $\frac{3}{4}$ mile, before reaching Sirdar Koti, where terminals of post consist of one shackle and one insulator which apparently not soldered sufficiently. Piece of binding wire found near post on raised mound of earth. Connection parted, leaving no indications of violence. Appears as though helix unravelled itself and worked off by strong gusts of contrary winds first to one side of line wire and, when both ends parted, the spiral was worked off in opposite direction through the parting, and dropped on ground. This however is only a surmise. The finding of the helix is due to the physiological fact that all obstacles to driving snow, like rocks, promontories, telegraph posts, etc., have at their base a bare spot of ground, due to the maelstromic action of the breeze. Fault repaired and an extra safety joint added to prevent a recurrence. 3rd January—Got Astor right at 13-15 ; offered him message, but earth would not permit of working station working through instrument, a proof that line is right."

3rd January.—Left Sirdar Koti and returned to Minimarg on the 5th, evening.

8th January.—Interruption, Gurais-Minimarg. Interruption, Astor-Minimarg. Left with a party of six men towards Gurais. Smith left towards Burzil. I opened at Mopanon and got Minimarg right. Smith had to return, being unable to proceed further. Pushed on to Peshwari.

9th January.—Left Peshwari, arrived Kamri, opened out, got Minimarg right.

10th January.—Left Kamri, arrived Zian. Opened out, got Minimarg and Gurais right. Received orders to return Minimarg as line repaired 5 miles from Gurais.

11th January.—Left Zian. Arrived Minimarg 13th, evening.

Extract from notes:—"Hair-breadth escapes from 8 avalanches. Party swamped between Kamri and Peshwari near where road zig-zags upwards. There was much bad language used while pulling ourselves together. On my return to Minimarg found that an avalanche from the opposite hill had made its way into the office verandah and formed a heap near the servants' quarters. The proverbial "oldest inhabitant" affirms this to be the severest winter in his recollection, breaking the record of 16 previous years. Arrived at Minimarg; found Smith had left the previous day (12th) for Burzil. I got no answer either side."

This has never been known to occur before. In front of office there is an almost perpendicular slope of about 30 feet down to river. For the avalanche to have risen up this slope and reached the office verandah, shows on what an immense scale the avalanches have been this winter.

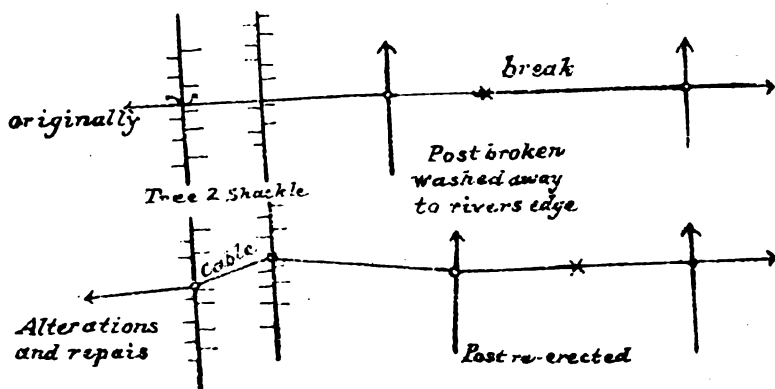
H. S. O.

14th January.—Left Minimarg at 8 hours; arrived Peshwari.

15th January.—Left Peshwari for Kamri arrived evening.

16th January.—Left Kamri, Zian evening.

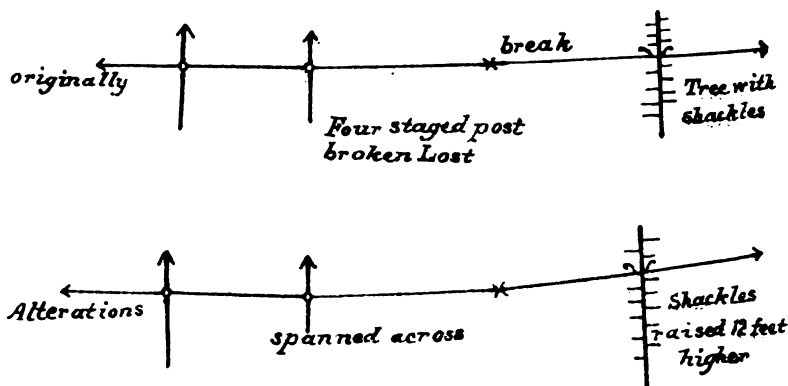
Extract from notes:—"At Bungla wire broken; post snapped away at base by huge avalanche. Ends of wire carried down to river's edge and buried in *débris*."



If there happens to be a similar avalanche in the same place, the interruption will recur. The trees are close enough to permit of the cable remaining intact. Whether the wire spans over the broken post or not, the avalanche will, under any circumstances, repeat its ravages.

17th January.—Repairing break at Bungla. The ground, being hard frozen, stubbornly resisted the work of the pick-axe for a long time.

18th January.—Repairing break No. 2, half a mile beyond Zian, where another avalanche completely carried away a four-stayed post. This break is very similar to the Bungla break. The ends of the wire were firmly imbedded in huge blocks of crystal ice, like flies in amber.



18th January, 6 P. M., Lineman from Gurais arrived and reported "no breaks between Gurais and Zian."

19th January.—Left Zian, returned Minimarg 21st, evening. Total number of days on line, 49 with an interval of 5 days.

The dangers on the Burzil section are principally apprehended from snow-storms and hurricanes. The Minimarg-Gurais section has avalanches, snowstorms and whole areas of solid ice suddenly collapsing with the weight of the party. The heights at which the hills are climbable are enormous. At times, when crossing over the *débris* of avalanches with uncertain footholds, and when with the toes only the equilibrium of a person is maintained on pinnacles of snow, the situation is enough to stand the hair of a stoic on end.

On my return to Minimarg I found Smith just as I left him. He was singing as I came in. The tune was one which nobody has ever heard before. Somebody of consequence has asserted

that few people have heard the rich notes of a dying swan. Those who have not had the pleasure are indeed unfortunate. Smith indignantly declines an offer of a free passage to Berlin on a visit to a certain academy to finish his musical education.

From the middle of January to the present time, the river is coated with a layer of solid ice varying in thickness from 1 to 28 inches. On one occasion an avalanche from the off-side had broken through the ice and *bunded* the river. The water had sufficiently accumulated to break through the obstacle, and for a whole week the river was in flood, which necessitated my party having to keep on the hills.

No minute inspection of the line is possible, and the only way to do it is to inspect wherever it is visible, and after every couple of miles to open out and ascertain if all's well.

The inconveniences attending a night at a village are felt shortly after in the way of a creepy sensation of a very suspicious nature. After careful enquiry into the matter, a wholesale slaughter of objectionable resemblances to *animalcule* ensues.

The bungalow at Sirdar Koti is of a most uninviting aspect and this is soon realised when every door and window is found to have been sacrificed at the altar of comfort by a preceding traveller or, more correctly speaking, the *dak* runners who do not scruple to cut away a whole beam to feed a fire with.

It was at Sirdar Koti that I observed Smith did not adopt the usual preliminaries prior to retiring for night. After having dried his clothes near a bad fire, he merely slipped off his grass shoes and unceremoniously slipped between the blankets. After an explanation of this singular proceeding, I followed his good example. *Poshteens*, caps, hair-socks, *puttees* complete, all retired together with Smith—all but goggles and grass-shoes. The intense cold kept me awake the whole night, so I roused the party at 4 A. M., but found it was as dark as Erebus, until 6-30, when we proceeded by twilight. A native hut, costing Rs. 15 to Rs.

Do not think this would be any use. *Dak* runners would not hesitate to burn both hut and wood.

H. S. O. 20, will luxuriously accommodate a store of firewood, and accord shelter and warmth which it would be well for our reliefs to think about.

Hair-socks, grass-shoes and sheepskin versus *Canadian and Norwegian snow-shoes*. Ordinarily the former are very much more preferable. It is only when the snow is too soft and the old track altogether obliterated that the *wooden* snow-shoes are used. In certain places which require perpendicular climbing, the Canadian shoes are of no utility whatever, when whole slabs of hard snow slip from under the feet. In such places every footstep holds the life of the person to whom it belongs. The foothold once lost, there remains a prospect of 500 yards of locomotion with a bump

on the rocks below. This prospect in fact becomes inevitable.

The *Thermometers* in *January* registered maximum 19°, minimum 3° below zero.

Not so low a temperature as I thought there would be at Minimarg. In Srinagar the minimum reading in February was 5° below zero.

During *February* maximum 28°, minimum 5° or 5° above zero.

These readings are registered by the instruments of the Meteorological Department.

In conclusion, I, in my own humble way, congratulate our Director General, in having so wisely intrusted the construction of the line to H. S. Olphert, Esq.

To have so planted the line as to avoid avalanches altogether is an impossibility.

It appears like a champion game of chess between our much-respected officer and the wild ungovernable elements of nature.

To win *in toto* means to carry the line on the very summits of the hills with double iron telescopic posts and gigantic spans of suitable steel wire.

There appears to me to be no such thing as "likely places" for avalanches to come down. They sweep down anywhere, and there is nothing created that would stand the impetus. The earth for miles around vibrates with the awful rush of a collection of snow 8 to 18 feet deep, with an area of 500 to 800 x 50 to 80 square yards.

H. S. O.

How the line has withstood the rain of avalanches in so singularly successful a manner is a fact which points to the ingenuity and far-seeing tactics of the Construction Officer.

A TRIP IN SOMALI LAND (WITH MAP).

BY CAPTAIN WELLBY, 18TH HUSSARS.

In the spring of 1894, it was my good fortune to collect sufficient enticing information to induce me to leave alone the hot jungles of Central India, to take no part in the race for a freezing *nullah* of the Himalayas, but to try what sport and pleasure the imperfectly known country of Somali Land would afford.

The first question that naturally presents itself in regard to all shooting trips is "How to get there," for this knowledge is a *sine quâ non* to any expedition.

A departure from India is made either from Bombay or Karachi, and thence to Aden in the boat that best suits the convenience of the sportsman. He can travel by the weekly P. and O. from Bombay, a single fare costing somewhat under Rs. 300, or may choose another line, the cheapest, I believe, being the British India, under Rs. 200; while from Karachi, the Messageries Maritimes run monthly or thereabouts for about Rs. 250.

The only difficulty that, so early, has to be overcome is the transport of the cartridges, for some lines refuse to take them at all.

The voyage, by the way, what a week of imprisonment it is! You are confined within a small space with a fixed routine of daily life laid down, which has to be adhered to, and amongst your fellow passengers, you are lucky if perhaps you discover one or two who can share in the same ideas and inclinations as yourself. But when your next door neighbour at dinner and at breakfast too, if she is well enough to appear, continues to daily pump you as to where "Soimari" Land is and about the *tigers* there, whether they have *horns*! it is then indeed with a keenness and delight indescribable that you clamber down the huge floating cell into a small bobbing, rowing boat half filled with noisy, nearly naked Somali boys, who in a short time land you at your first stage, Aden.

Thence to Berbera, the best point whence to start your little expedition, is roughly speaking about 140 miles, and is best accomplished in the Government boat, the *Dalhousie*, if she should happen to be sailing soon after your arrival in Aden, for the boat plies according to circumstances between Aden, Perim, Zeylah,

Bulhar and Berbera. Failing that means of crossing, there remain the trading steamers, either the *Tuna* or the *Sheikh Berkhud*, one of which is sure of affording you a fairly early start, and is certain of landing you and your belongings, for a small sum, safe at Berbera, and is more than a wind-dependent *dhow* can promise.

At Aden, where the Resident is only too willing to assist a sportsman with every kindness, you can put up comfortably enough at the *Europe Hotel*, kept by an obliging man named Ali who has lived there the whole of his life pretty nearly, since the British occupation of the peninsula, and knows the ways and wants of the *Sahib log* and how to preserve what goods and chattels, superfluous on a shooting trip, you care to leave with him until you return.

A great number of articles fulfilling requirements on board a P. and O. will become decidedly burdensome in Somali Land where one's own personal apparel may be practically summed up under the following:—some khaki coats and breeches, flannel shirts and boots, and in regard to the latter those made of *sambhar* leather with cotton soles are preferable, while the sun-hat which crowns all should be as little conspicuous as possible.

The battery should contain a shot gun with No. 3's and 4's at any rate, and rifles according to taste.

Personally I found a 12 bore rifle with Forsyth's shells defeated the lion and with hardened bullets conquered the rhino, while a .450 or .500 express is as useful for the larger antelope as a sporting Martini-Henry carbine is as handy, light and powerful for the small ones. But for me to advise the sportsman who contemplates a visit to the country would be of no worth, for we all hold our own theory in regard to large and small bore rifles and solid or hollow bullets.

Although a man like Selous may knock over with fair certainty an elephant with a .450 express, loaded with a cartridge containing only 75 grains of powder and a long solid hardened bullet of 540 grains, yet personally, if I were to meet a tusked I should feel more certainty of possessing the ivory, if I were carrying a rifle with more smashing and stopping power, such as an 8 or even a 4 bore with 12 or 14 drams. But men like Selous who can aim straight to the brute's heart, lungs, brain, or through the channel of the ear are few and far between, and they too can only do it after a long and observant experience has given them sufficient confidence in their own power.

If I were to visit the country again and could have my choice of weapons, I should take an 8 bore with a good 12 drams of powder and a hardened bullet of 3 ounces, a .577 express with 6 drams and solid or hollow bullets, and a .450 sporting

Martini-Henry carbine. It is too, I believe, a good plan, if one takes a large and varied battery, to have the weapons provided with the same kind of sight and with the same pull off, for there is a very feasible possibility that a pull-off varying from 3 lbs. in one rifle to 10 lbs. in another, may one day surprise and dishearten the sportsman by a premature, or late fall of the trigger, perhaps causing an unintentional jerk and consequently an erring shot, or, what is far worse, a wounded animal to roam about in pain till he becomes a prey for beasts or birds the following morning.

Besides the different bags for one's own cartridges, it will please the Somali followers to give them each a belt in which to stick the ammunition of the Government rifles. In regard to skinning knives, they should be plentiful, and an ordinary butcher's knife, which is inexpensive, will answer the purpose. A whetstone, too, should not be forgotten.

To preserve skins, plenty of alum and turpentine will suffice, but it should be remembered that the Somali will skin but rough and readily, although decidedly quickly, and unless carefully watched will at once peg out every skin to be dried and scorched up by the mid-day sun.

Carbolic oil is good for the sore backs of camels and an improvement upon the native medicine consisting of a poultice of hot wood ashes.

Castor oil and stiff pills are good too, and readily accepted by the Somali followers, who, in fact, will place entire reliance upon the medicinal capabilities of the Sirkar to heal, cure, or mend any disease or external injury. Sometimes I have been asked to prescribe for a festering, deep, spear wound, a broken arm and many internal failings.

In regard to "stores," well, "*chacun á son gout*," yet lime juice and tinned vegetables will not be wasted when only meat and milk are procurable. These stores, however, should be packed up into boxes with lids that can be screwed on and off, containing provisions which are considered necessary for a fortnight or more, and the box which is in daily use should have a lid with hinges so as to be capable of being quickly opened, packed up and closed again. All boxes should be of oblong shape and not too deep, so as to lie flat on the camel's back and balance each other.

Before starting from India for Somali Land it is necessary to write to the Political Resident, Somali Coast, residing at Aden, for permission to enter the country. This having been granted, it is then the wisest plan to enter into correspondence beforehand with the Resident at Berbera, informing him when you intend to arrive there, for how long you wish to shoot and,

having forwarded a cheque requisite for the occasion, say two thousand rupees, he will be only too pleased to collect your men and camels for you beforehand and to assist you in any other way. This, of course, will save you a certain amount of time, a deal of bargaining in the hot sun surrounded by a still hotter crowd of idle Somali men and boys, for even of this sort of fun one can have too much. There are but few drawbacks connected with the *bandobast*; one peculiar to the expedition which, while generally unnecessary, is still an order to be adhered to, is the procuring of rifles for an escort, the strength of which is determined by the Resident and may vary from 10 to 20 men. These rifles together with the ammunition, perhaps 200 rounds per head, may be got after much trying red-tape correspondence from the arsenals in India, sometimes also from the arsenal at Aden. The escort consists of the men who march with, load and unload the camels, make *zarebas*, work sometimes as trackers and, in fact, make themselves useful in any capacity they are wanted. If you are not particular as to which direction you work your shoot, it is best to leave this question to be decided by the *shikaries* you engage, who without fail will take you to ground known to be frequented by the animals, which you are desirous of shooting, for they themselves are keen to gain a good reputation, to receive the valuable "*chit*" of recommendation, and to be rewarded with a liberal *bakshish* at the end of the trip.

When I arrived at Berbera, stubborn, pigheaded, and eager to traverse land untrodden and unknown by any *shikaries*, I struck a general direction E. by S. but from what I gather should certainly have secured a more varied bag had I travelled in a S. W. direction to the regions of the elephant, lion and rhinoceros, or the *Marodi*, *Liba* and *Wheal*, and what a sensible word *Wheal* is compared to our R.....s.

I was accompanied by Malcolm of the 93rd Highlanders for the first four or five weeks, and we spent two or three days at Berbera making our *bandobast* before starting. We had to buy our camels, 29 in all, and as they brought them in for us, we either purchased them or discarded them for being weak or otherwise unfitted for marching, either on account of possessing a tender hump or elbows likely to rub and chafe, or what we considered, with our small knowledge about them, to be unfitted for hard work by their general appearance. We procured a pot of tar and branded each camel on the neck with a number; we also branded ourselves liberally, but with no particular number. These marks answered their purpose very well at first, but in a few days afterwards were not even visible, and the camels might easily have been changed for inferior ones, when mixed up with others, to the advantage of the man who

managed it and to the owner's loss. We paid for the camels Rs. 35 each, on an average, and sold them on our return to Berbera for about Rs. 19 each. A camel with a bad back, when he always seems to lose condition too, will fetch next to nothing, so it is a pleasanter ending to a successful trip, to present such an animal to one of your followers who will much appreciate it, instead of scraping in four or five rupees from a thrifty outsider, for such a camel will not bring the owner in more. Since, then, a camel in good condition will fetch back again nearly its former value, the best plan is to buy a few extra camels at the outset, loading them lightly with not more than 200 lbs, and carefully watching and inspecting the backs of them all every morning and evening; this advice we failed to carry out properly during the first fortnight, for we trusted too much in our head man Mahomed Hirsi, who was not altogether fitted for the job and gained notoriety by consuming most of our medicine. An instance at this moment strikes me of an officer from India who arrived at Berbera while I was waiting to return in the *Sheikh Berklud* to Aden. He started on his trip, and insisted on taking two camels blessed with unsound backs, so that a few days afterwards he was compelled to halt and await the arrival of the men he had sent back to Berbera to purchase and bring out some more camels to him, for with them in this condition he found it impossible to proceed further. It is this kind of avoidable hindrance that in no way adds to the sport and pleasure of a limited shooting trip.

The number of camels required is regulated by the number of followers that accompany you, and this is determined principally by the district through which you intend to travel, also by the length of the time you are bound to the wilds, it being known that a single man must have at the lowest calculation *per diem* 1 lb. rice, $\frac{1}{2}$ lb. dates, and 2 oz. *ghee*, with a little salt. These rations should be bought at Berbera and sewn up into the required loads by the camel-men before starting. The price of rice is about Rs. 9 for 150 lbs. although inferior rice can be bought at a cheaper rate. Dates are Rs. 5 to 6 per *coursa* consisting of about 120 lbs., and *ghee* 10 annas per pound. Besides this, two or three camel-loads of extra rations will be found most useful not only for giving away to different tribesmen and starved beggars sometimes met, but also for your own men who thoroughly enjoy, and work better upon, a little extra *ghee*. Several camels, too, are required for water, perhaps 8 or 10 or more. This may be carried either in barrels, holding 6 or 8 gallons, which should be flat-sided (not tub-like) to ride flat on the camel's back, and, as they are not always to be bought at Berbera, they should be brought over either from William Watson in Bombay or from

Aden,—or in 'hans' which are country-made vessels made of grass or reeds and *ghee*; consequently the water will collect cream or, in other words, some portions of the fat will float about the surface and give a flavour. Another drawback is the liability there always is of their being upset, generally when water is scarce, by the rough and thoughtless Somali boy; they frequently, too, get broken, and unless one is fortunate enough to hit upon a *karia* or settlement, they remain in this useless state awaiting the handi-craft of a woman to repair them, for the men themselves are unable to do so.

Each camel carries 3 *mats*, which are bought at Berbera, instead of a saddle or *palan*, the first one being called "Kevit" and softer than the two upper ones called "Ousse." I always felt a kind of inward regard for these mats when I remembered that they had been made by the women of the country through first chowing the inside bark of the *khansa* bush, squatting day after day, busied with this sole occupation, and I endeavoured to calculate how many years it would take myself to chew enough for a camel mat. The loads are fastened on to these heavy coverings by means of rope which should be plentiful. Hatchets and axes, too, should be taken for building the thorn zareba at night time which can be speedily and effectively made by cutting down the thorn bushes at hand, and forming a circle of them round the camp, bushy parts outwards, just large enough to hold your men, camels, and self, taking care that the wind from the camels blows in the right direction. This zareba is necessary, when inland, to save the goods from satisfying the hunger of the greedy hyenas, and in some places from other animals, as well as from theft by strangers. Presents for the head-men of tribes must be taken in the shape of cloth, white American being preferred, cut into pieces called *tobes*; also coloured cloth called *khailies* for the larger swells who generally carry a sword instead of a spear.

I had heard mention so often made of the white *tobes* worn by the Somalis round the waist and over the shoulder, and my first night in Africa has helped me never to forget them. I happened to be sleeping in a room built on the roof of the Resident's bungalow at Berbera, a room chiefly remarkable for being all doors and windows, for it was only about 12 feet square, and boasted of three large folding doors and eight windows. I suddenly awoke during the first night with that unpleasant sensation that I was not alone in the room, so determining at any rate for the time being to give up my prior claim to the intruder, I leaped out of bed, fled on to the roof and wondered at the myriads of stars and the dead silence of the night, for, beyond the continual gentle splashing of the sea upon the sandy coast, there was no other

movement or sign of life upon this desolate-looking shore to be heard, and I felt that I was alone with the exception of the person who had occupied my room.

Suspecting therefore it must be a thief, I resolved at first to wake up the inmates below, but luckily the keen night air brought me to my senses and saved me a chilly ramble, for I exclaimed 'it must surely be a dream,' and thenceforth stepped into my room again. But, sure as life, there I could indistinctly see the white *tobe* of a Somali in one corner of the room, and feeling that immediate action was the only course, I seized my boots, which were alongside my bed, and hurled them with full force at the vile disturber of repose. With a fearful yell, a white mass flew past me and all was still again. The following morning, this unwelcome visitor turned out to be the Resident's white dog and not the white *tobe*, for they said "poor fellow ! he always sleeps in that room."

But to continue the *bandobast*—a few *korans* should be taken to give away to holy men or *hadjis*, as they are called. Tobacco, which is bought in large coarse leaves, is much liked by some tribes, and knickknacks of sorts are admired by the women. Scales with weights and measures for doling out the rice, dates, and *ghee* will regulate the proper expenditure of the rations,—for the Somali usually will never reckon for how long the food has to last him,—and some huge *degchies* for boiling all this rice together, are required. Goats should be taken, if one is anxious to have fresh milk at all times. Ponies, too, should be taken and are useful for *shikar* if an animal is wounded, and sometimes for carrying a sick man. Some sportsmen, who can afford it, bring a pony over to the country with them. This has one great disadvantage, for food for a pony of this description must be carried, whereas a pony, which is bought at Berbera for about Rs. 120, will live alone on the grass like the camels, and can do well with much less water than an imported pony can. But it is advisable to bring an old saddle over, for those of the country are uncomfortable to ride in with their very high cantles and pommels, and, unless you take your shoes and stockings off, you cannot use the stirrup irons, for they only admit of two toes at the most. In buying camels or ponies the reckoning is made in dollars, one of them being considered equal to Rs. 2-2, yet, if you wish to obtain a dollar, you can buy it in the bazar for 1 rupee 14 annas. To mention every thing, however, would tax a much less sieve-like brain than mine ; suffice it to say that, when once started, the sportsman should be prepared for the intended number of weeks or months of a wandering life, to rely upon his own guns and *khajila* for every need and unforeseen event. It may undoubtedly be classed as making a sea voyage by land.

During the actual travelling, very much money is not required, perhaps Rs. 500 in cash; and all money matters are easily manipulated by paying at the outset a cheque into the agent Cowasji Dinshaw at Aden, who will provide a letter of credit to another agent in the bazar at Berbera. The pay of Somali followers may be quickly summed up as stiff, and each man of the *khajila* expects about a month's pay in advance before starting.

The pay of an ordinary camel-man is Rs. 15 per month, and Rs. 16 for an extra long journey. A *shikari* as well as a head-man requires Rs. 40 a month or even more, a cook Rs. 25, and any other kind of billet must be remunerated in equal proportion. Beyond this reward for services, *backshish* forms a prominent item at the conclusion of the trip, and will probably do so more each year.

In regard to the Somali himself, I have often heard him abused and classed as not to bear comparison with the mild Hindu; this is probably due to his greed. Granted he is avaricious and very much so, it is nevertheless highly probable that we ourselves should have shown the same mark in our characters if we had undergone the same conditions of life, namely,—after living as savages whose wealth was alone counted by the number of their camels, obtained by making raids at risk of loss of limb or life,—to find strangers suddenly landing one day and penetrating into the country with a wonderful and strange paraphernalia, capable, too, of buying up any number of camels they may think fit. Of course, we should have done our utmost to get from these foreigners, of apparent boundless wealth, as much reward as we could, especially after having served them loyally with pluck, keenness and willingness. After all, his greatest fault, avarice, is somewhat drowned in many of his other excellent qualities, for the Somali is a keen sportsman, a ready helper, very often one to stand by you, and scrupulously honest for a savage; in consequence he must be treated and considered as such, and not as one who has been enlightened by the forward march of civilization and the latest improvements. His character, from his wild and uncertain life, is changeable in mood to a degree, for at one moment he is cheerful and happy beyond description, and thoroughly gloomy and despondent the next. I well remember seeing two of my men one day, one being a Dolbahanta and the other a Kabr Toljoala, who had been wrangling over a very trifling matter concerning an axe, go at one another and tear and fight just like two wild animals.

Fearing worse results, I had them separated and tied to two opposite trees, where they at once became sad and melancholy, but, on their release, they appeared to have forgotten

their former conduct and were as merry as sand boys in the exuberance of their spirits. Personally, I should never want a better lot of fellows on the whole, than those who accompanied me on my trip, and the best men were those who had never been outside the limits of their own land, not even to make the short voyage to Aden. There it is possible to pick up as sharp a scoundrel as any one could wish.

It is advantageous to have one or two men from Aden, who have picked up sufficient Hindustani for ordinary purposes, and sometimes a smattering of English; this is a far better plan than to bring any servant from India, however useful he may be and anxious to accompany his master wherever master goes. Whether he be a *shikari*, *khidmatgar* or bearer, the chances are that he will have a very poor time of it in Somali Land, for he will be despised and looked down upon as a very inferior being to the Somali people themselves, and will be treated, too, as such.

Therefore, leave the faithful Abdul to vegetate in the bazar and to look after your dogs, for if you bring any with you they will, in the majority of cases, never return again.

There are two ways of travelling, according to choice, either by making one long march a day or by substituting for this two short ones. The latter I found to be preferable, and managed it somewhat after the following method. The first march of the day was commenced before daybreak, and, while the camels plodded along some $2\frac{1}{2}$ miles per hour with one man leading three or four of them strung together, while others marched in front or on either side, we used to diverge either to the right or left in search of game and seldom returned empty to the first halting stage, which was some spot chosen almost exclusively for its affording green food for the camels, and, if possible, water and a shady tree. The lack of water may be considered as the greatest drawback to the country, yet this to a certain extent may be overcome by carrying it in barrels, in sufficient quantities for drinking purposes for two or three weeks. In an ordinary shooting trip it is highly probable that one will not march for more than 10 days without coming across a new supply of water, but the fresh supply may be of an inferior kind. I believe, in spite of the colour, there is little to be feared from some of the water likely to be met with, particularly that of a brown or reddish colour, when this has been cleansed by taking a little alum in the handkerchief and turning it round and round in the water until it is dissolved, and the dirt is at the bottom of the bucket. After filtering and boiling, I don't think there is any danger in drinking

the green or any other colored water out there. For a man who is particular or careful of himself, forty gallons or about two camel loads can be carried with no trouble with a little more expense, and sufficient, perhaps, to quench the thirst of one person for a whole month. The Somali follower himself can manage with about a pint a day, but he does not like to be thus curtailed and will work more cheerfully on a more liberal allowance, for he thoroughly enjoys his pot of water at the end of a long day as he sips it in his own time, as though it were some beverage of a more agreeable taste. Camels can go for a fortnight without water. Ponies, too, which some of the tribes possess in great numbers, will go a week easily without water, that is, when they have some good green grass to graze upon. This likewise applies to their numerous flocks of sheep and goats.

At about 10 or 11 o'clock, we used to make the midday halt which lasted till about 2 o'clock. This is an enjoyable and convenient time to take your breakfast, especially after a good-morning's work; you find your chair, table and water, which has become cold in the stone *comja*, all ready for you under some shady spot, your *khanla* having generally finished the march first. During that time the camels are unloaded and free to graze around and enjoy the midday rest. Soon after 1 o'clock, the couple of men, who watch over the camels, receive a shout to collect and drive them in to be reloaded for the second march. This is accomplished before the sun sets, at which time the camels are again relieved of their burdens and once more let loose to pick up whatever green food they can find, till darkness at length closing in reminds the man on watch over them that the time has arrived to drive them into the new zareba, which has been made as soon as a suitable place has been fixed upon for spending the night. During this period, namely from the time the halt is made until darkness sets in, those men who are not employed cutting thorn branches for the zareba or guarding the grazing camels, are cleaning the rifles and skins of animals shot during the day, preparing the rice for the evening meal, weighing out the allotted portions of dates and *ghee*, and all busy with the other multifarious little duties that are always incident at the end of a good day's marching and shooting. While Sirkar himself finds some satisfaction in discarding boots and clothes, and would find still more if the supply of water were not quite so limited. Then, after you have enjoyed your supper consisting perhaps of a stew, the pro-

duce of your own gun, which you consequently call tender and juicy, you rest calmly with a mind more than contented, feeling at peace with all mankind, and quietly puff at your friendly pipe in absolute freedom, recalling to mind again every little exciting incident of the day with only one eager wish to be starting off again on the morrow. All this, too, under a clear sky sparkling with a multitude of bright stars, with a temperature only to be described as perfect. It is then on some nights you hear your followers in pure childish delight dancing and clapping their hands, alternating with a few deep musical notes sung in concord around a blazing fire; till at length you discover that your eyes are closing, a sign to seek your welcome bed.

You are aroused again after sound sleep by the noise of men praying together as they stand in rows behind a leader,—who in my *khafilu* happened to be a *hadji* or priest,—facing in the direction of Mecca, or what they consider to be so. To load the camels again is only the work of half an hour, and you find you have commenced your day's march once more rather ahead of the rising sun.

For nearly the first fortnight of our travelling, we passed through country for the most part dry and stony, such as some might call uninteresting and depressing, but one cannot expect to find everywhere in a water-lacking country those thick jungles with dense undergrowth which are generally associated with plains shooting. Yet in regard to the game of the country, I believe wherever the sportsman may choose his line, he will firstly come in contact with the Gazelle Spekei, called *Dhero* by the Somalis. He strikes one at first as bearing some resemblance to the Indian, *chinkara*. He is gifted with a loose pouch of skin on the upper surface of the nose, and hence he is frequently called Gazelle Nasu. Those, however, found near the coast are of a somewhat different species, for they possess straight horns and are not ornamented with the loose skin on the nose. The female resembles the male, whose horns run to about 11 inches in length. On one afternoon I hit one of these *Dhero* in the hind leg, yet he was able to make off at a good speed. After pursuing him for some time, I was surprised and relieved to find that he had been headed by a fox who was chasing him in a circle in and out amongst the bushes, no doubt with the intention of exhausting the poor *Dhero* which would eventually lie down and become an easy prey. This latter he very quickly became for me, whilst the fox slunk away to seek for food elsewhere.

On every plateau, not far from the coast, will be found Sæmmering's Gazelle or "Awal." It is very common and is found in herds numbering over a hundred. It

and this advice is probably true for two reasons. Firstly, the Somali himself will make sure, by throwing a stone or two, that the beast is incapable of rising and doing mischief before he is "halaled;" and secondly—on one occasion, after killing one of these animals outright and after *halal* had been done, and the skin had been removed from nearly the whole of the body, he deliberately raised his head and looked round at us, as much as to ask what we were up to; this caused a general dropping of skinning knives and a stampede of *shikaries* with the usual amount of merriment afterwards.

Another gazelle frequently met is Waller's gazelle called *Gerenuk*. They are noticeable for their long neck and upper lip, but not easy to see, for they are very shy. One used all of a sudden to perceive an outstretched neck and head turned towards one, and the next moment it would disappear again. They feed upon the bushes, stretching forth their long necks to nibble the leaves. They are generally found separately or in herds of half a dozen, having slender legs white inside, and slender horns, not so stout as the *Ayal*, 15 inches long.

After finding a *gerenuk* and failing to get in a shot, it is well worth while visiting the same spot later on during the day, for as a rule it will have returned. I found that only two of my men would eat the flesh of these animals, but personally I thought their flesh as good as that of any other gazelle.

About the *Haud* district I came upon Swayne's *Hartebeeste* in the midst of large herd of *Ayal*. They are distinguished by the dark markings on the face, and in some places are easy to shoot. When they are more *hushyar*, a shot may be got by stalking them with a camel, and, when within proper range, dropping down on one knee, while the Somali continues to lead on the camel.

In the neighbourhood of Kerrit, about 150 miles S by E of Berbera, I shot some of the very beautiful Gazelle Clarkei, called *Dip Tac*, remarkable for their graceful neck and head, with slender horns turning upwards and inwards, 11 inches long. The females have no horns. Their bodies and legs are slender, and when they scamper off, for they are very shy, they turn up their long thin tails in a marvellous way. We kept one of these young gazelles in captivity, and he became very tame and companionable refusing any food except from the spoon, till, later on, one had only to show one to the little chap when he would go almost frantic with delight, jumping up like a dog and resting his forelegs on one's knee. He died at Berbera.

In some of the hills a short distance south of Berbera,

is stoutly built and of a fawn colour with a white rump, breast, belly and tail, and with large ears. It stands about 2 feet 6 inches with stoutly-built horns, thicker in the middle than the ends, and 18 or 20 inches long. It is easy to kill, and very often, after the first shot, retreats a short distance and stops, and gives the stalker a second chance. In the early morning I have found young ones in the open plain lying down, with their parents a few hundred yards off feeding on the dry grass. I have been ignorant of my approach until, by sudden surprising and pouring upon the dreaming little ones, I have caused the startled cries to bring the elder ones trotting up to their rescue and perhaps to fall victims to my cruelty.

The sand antelope, *Dik Dik*, is not nearly everywhere, and *Specter*. They mostly run about in pairs and afford good sport for the shot gun.

They vary in grey and chestnut colour in different localities, and have little horns or spikes about 3 inches long. I have killed the young of these on milk but only with uncertain success. I have seen men of the Hadramaut tribe kill these *Dik Diks* over by throwing a small club of hard wood at them.

In most places the oryx is met, and, with never failing success, help the craft of the stalker, there is little doubt of the young shooting practically as many as are required. I have found separately or in herds up to forty and fifty, and it is only a well trained eye that can discover which are the males, whose horns are but a little bit shorter, though not so good, then those of the female. A single animal is easier to shoot than one of a large herd; the more there are in a herd the more difficult it comes the stalk, for they are scattered over a large plain, making it no easy job to escape detection, when starting the whole herd immediately to a alarm as soon as one of the number has done so.

They are of a greyish brown colour with a black and white face and a longish tail ending in a black tip. The skin, which is well through back, are sometimes 40 inches in length, and have consequently been used by the Somalis as a weapon of defence. The skin too is valuable for that purpose over the whole body, and of its immense thickness, turns as hard as the hide of a lion when the thrust of a spear or the pressure of an arrow is applied. It can be scraped, polished and used as a top of a drum. The horns of the male is cut up into small pieces and the most valuable meat which, for the Somalis are very fond of it and eat it in small quantities. Their country may be said to be a little bit of a desert, but two of them can live on a bush for a month or more. It has been told that a woman and her husband were approached by a herd of

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led;" and secondly—on one occasion, after killing one of these animals outright and after *halal* had been done, and the skin had been removed from nearly the whole of the body, he deliberately raised his head and looked round at us, as much as to ask what we were up to; this caused a general dropping of skinning knives and a stampede of *shikaries* with the usual amount of merriment afterwards.

Another gazelle frequently met is Waller's gazelle called *Gerenuk*. They are noticeable for their long neck and upper lip, but not easy to see, for they are very shy. One used all of a sudden to perceive an outstretched neck and head turned towards one, and the next moment it would disappear again. They feed upon the bushes, stretching forth their long necks to nibble the leaves. They are generally found separately or in herds of half a dozen, having slender legs white inside, and slender horns, not so stout as the *Awal*, 15 inches long.

After finding a *gerenuk* and failing to get in a shot, it is well worth while visiting the same spot later on during the day, for as a rule it will have returned. I found that only two of my men would eat the flesh of these animals, but personally I thought their flesh as good as that of any other gazelle.

About the *Haad* district I came upon Swayne's *Hartebeeste* in the midst of large herd of *Awal*. They are distinguished by the dark markings on the face, and in some places are easy to shoot. When they are more *hushyar*, a shot may be got by stalking them with a camel, and, when within proper range, dropping down on one knee, while the Somali continues to lead on the camel.

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The sand antelope, *Dik Dik*, is met nearly everywhere, called *Sagara*. They mostly run about in pairs and afford good fun for the shot gun.

They vary in grey and chestnut colour, in different localities, and have little horns or spikes about 3 inches long. I have kept the young of these on milk but only with uncertain success. I have seen men of the Habr Garhajis tribe knock these *Dik Dik* over by throwing a small club of hard wood at them.

In most places the oryx is met, and, whenever a few bushes help the craft of the stalker, there is little difficulty in shooting practically as many as are required. They are found separately or in herds up to forty and fifty, and it is only a well trained eye that can discover which are the males, whose horns are but a little bit stouter, though not longer, than those of the female. A single animal is easier to shoot than one out of a large herd; the more there are in a herd the more difficult becomes the stalk, for they are scattered over a large piece of ground, making it no easy job to escape detection, when stalking, for the whole herd immediately take alarm as soon as one of their number has done so.

They are of a greyish-roan colour with a black and white face and a longish tail ending in a black tuft. The straight horns well thrown back, are sometimes 40 inches in length and have, consequently been used by the Somali as a weapon of war. Their skin too is valuable, for that portion over the withers, on account of its immense thickness, forms a shield sufficiently hard to withstand the thrust of a spear or the penetration of an arrow, and can also be shaped, polished, and used as a top of a table. The remainder of the hide is cut up into strips, and the meat is by no means wasted, for the Somalis are very fond of it and eat enormous quantities; their capacity may be imagined when it is known that two of them can devour a whole sheep in one night. I have been told that a wounded oryx should be approached cautiously,

and this advice is probably true for two reasons. Firstly, the Somali himself will make sure, by throwing a stone or two, that the beast is incapable of rising and doing mischief before he is "halaled;" and secondly—on one occasion, after killing one of these animals outright and after *halal* had been done, and the skin had been removed from nearly the whole of the body, he deliberately raised his head and looked round at us, as much as to ask what we were up to; this caused a general dropping of skinning knives and a stampede of *shikaries* with the usual amount of merriment afterwards.

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In some of the hills a short distance south of Berbera,

and in some, 60 or 70 miles eastwards, the great *Koodoo* is met, possessing fine horns 40 inches long, resembling somewhat those of the *Markhor*. His body is of an iron grey with three white stripes down the sides and one across the quarters. I have seen them in herds containing 6 or 8 females and one male, and one has to follow much the same tactics as one would to shoot a *sambhur*. Amongst the bushes, at the foot of the hills, the lesser *koodoo* is found, and I have met with them a little north of Daror. He is a beautiful animal and is generally found feeding upon the bushes, separately or in very small herds, and makes a kind of bark when disturbed. His body is of a bluish grey, with fourteen white stripes down it. His horns are spiral and nearly 2 feet long. Throughout the hills wherever there are stony barren places, the *Klipspringer*, called *Alakud*, is always found and easily shot. He stands conspicuous upon an outstanding rock, and, unless the sportsman wants to take advantage of this feeding upon the rocks, he finally makes a sneeze and is off and away. He has little sharp horns about 4 inches long, while the size of his body and his coarse-haired coat remind one very much of the musk deer of the Himalayas.

Besides these antelope already mentioned, there are some less interesting animals which are, as a rule, met with everywhere, namely the wild ass, the wart hog, the spotted hyena *Waraba*, which is supposed to be hermaphrodite, and the striped hyena *Lidder* which differs from the former in that he is harmless. For the shot gun, the large and small bustard, the jungle fowl, sand grouse, guinea fowl and the small skinny hares, afford excellent sport.

Of those animals which can be classed as dangerous, the panther *Sheybeyl* may be met with at any time. I remember, while returning one evening to camp, having shot a *gerenook* so inaccurately as to break one of his hind legs, I was running after him as hard as I could, in fear he might escape, for the sun was beginning to set, when, all of a sudden, I was surprised to see a panther following at a short distance behind him, no doubt eager and confident of easily securing a plentiful supper. He must however, have viewed me at the same moment, inasmuch as he immediately disappeared from my sight; shortly afterwards, not wishing to fire and frighten the panther, I was successful with the aid of my two *shikaris* in catching the *gerenook* by the horns and cutting his throat. It was growing dark as I sat down ten yards away from the dead body behind a small bush, to await the return of the panther. In a very short time, a number of jackals put in an appearance and settled down to their meal, when I saw stealing towards them in the uncertain light, what struck me at first as the ob-

ject of my plan; but, on its approaching closer, I discovered it to be a huge striped hyena which for a moment stood quietly over the unconscious jackals and then apparently remarked, "clear aside you cheeky young whippersnappers;" and while they scattered away in all directions he seized the whole body of the dead *gerenook* in his jaws and quietly trotted off with his easily obtained *loot*, and I went off disappointed to my zareba. Although this beast thus deprived me of the chance of potting the panther, nevertheless he afforded me the satisfaction of viewing at close quarters some of the interesting night work that is carried on by these wild and cowardly animals, and also of corroborating the truth about the wonderful power of jaw for which the hyena is so renowned.

The rhinoceros is met, not, as is generally supposed, in the regions of rivers and swampy ground, but twenty miles and more away from any water at all, feeding upon the grass most suited to his taste. A rhinoceros, which I shot, was five and twenty miles away from Daror where there happened to be a small pool of water, by reason of some recent rain, and I have seen signs of these animals still further away from water in an easterly direction from Daror. However, they were scarce in these parts, but natives informed me that westwards they, as well as elephants and lions, were plentiful enough.

An account of the chase I enjoyed after a rhinoceros may be interesting in some measure, as illustrating the ways of the natives. I was encamped some 30 miles or so north west of Daror, shifting about in the hopes of finding a rhino, when on the evening of my arrival some Midgans paid a visit to my zareba. These Midgans, who live chiefly by hunting, are a kind of outcast tribe and are much looked down upon and despised by the rest of the Somalis. Knowing that they always passed a wild life in the jungles, I enquired of them through my head-man if they ever came across *Wheal*. To this they replied that they knew where to find them sometimes, and would let me know when they did come across one; they concluded by asking me to give them some matches. Of course I gave them some boxes of sulphurs, but much to the astonishment of my own men who were against my doing so; they laughed and said that I should never see the Midgans again and that they had only promised to bring in *khubber* of the *wheal* in order to get the matches out of me. However, I knew in what small estimation these outcast Midgans were held by my own men, so kept silence, at the same time feeling pretty confident that they would not altogether forget their promise; and this turned out to be the case. Two days afterwards, although my camp had been shifted, on returning to my zareba about midday, I saw the Midgans, to whom I had given the matches, standing outside, while the ponies upon which they had ridden in were grazing close by. They

were telling my men, who were left behind, that they knew where a *wheal* was living some 10 or 12 miles away, and that, if I would go out at once, they would show it to me. Now although, as a rule, it is a good plan to follow the advice of native *shikaries* in a country unknown to oneself, in this case it struck me as worth while to make an exception. My *shikaries* expressed their entire disbelief in the Midgans' story and were most unwilling to start. However, the discussion ended in their setting out with minds sullen and unwilling, Nur, and Ebrahim together with five Midgans and myself. It was pleasant and enjoyable to a degree to be galloping along, for there was no time to lose, over open plains through bush and grass, after having been on foot so much. I was glad to be off, too, and anxious to convince my men of their mistake, and that they should not altogether disregard the words of these Midgans. Yet it was not to be all plain sailing, for twice *en route*, when pushing along in full swing, following each other in one line, the cavalcade suddenly stopped as though by instinct, when more words and arguments were held forth by my *shikaries*, in whose minds the doubt of meeting with success appeared to increase. At last, when the ponies had gone as far as was good for them, we espied standing in the top branches of a tree a nude Midgan who was supposed to be watching the rhino, and in truth it was only a supposition for there was no animal in sight. At the foot of this tree there were more Midgans, and with them a pack of 10 dogs with which they hunt down the *Oryx* and other gazelles for their meat.

After more persuasion and a certain amount of wrangling, we left the ponies, dogs, and the remainder of the men by the tree, while Nur and Ebrahim, two Midgans and myself started off on foot to try and discover the whereabouts of the rhino. The further we proceeded, the fainter grew our hopes; one of us climbed each tree or red ant-hill we came upon, in order to obtain a more extensive view of the surrounding country, but every time without result. We had at last determined to return, and were sitting with scarcely aoom for all on the top of an ant hill, a silent monument of despair and gloominess, when the disbelieving Nur starts so suddenly that I, who am next to him, perforce roll to the bottom. But he has reason to start, for he has, while despondently gazing ahead, spotted the rhino quietly enjoying its afternoon meal amidst the grass. We are at once all alert and, perhaps, with unnecessary caution creep a long way round so as to get the wind in our favour before attempting to approach any nearer. At length, after crawling along I rise from all fours, and discover the *wheal* which is quite unconscious of our vicinity and only 30 yards off; without difficulty I place the hardened lead behind his right shoulder, but he trots

off nevertheless, no doubt to die that same evening, we running hard barely keep him in view. My heavy 12 bore appears to me to grow heavier and heavier every minute till, unable to continue the pursuit any further, I hand my rifle to Nur, and point in the direction of the fleeing *Wheal*. Now, it appeared that the nude Midgan, above mentioned, had watched the course of events, for one of his friends very soon comes cantering up to me on his pony. He and I quickly change places, and galloping off I soon come upon the recumbent body of the exhausted Ebrahim, who quickly jumps up on the pony's back behind me. Shortly afterwards we find Nur at a standstill, leaning against a tree, but he hands Ebrahim the rifle; so, with this in one hand and with his other arm round my waist, we continue the gallop and view the rhino ahead still at the trot. We can see he is going slower and that we are getting nearer, and nearer, and as the pony suddenly dodges a thorn bush he nearly loses his load at the same time. At length we arrive alongside him, and hurriedly scrambling off the pony I take the rifle, which is already at full cock, from Ebrahim and at a few yards distance, plant a second bullet in the fatal spot, whereupon the great brute can only totter a few yards before he heavily falls dead upon his side. Soon all are assembled around the ponderous carcass, the tail of which we cut off as a sign of triumph, for there is no time to do more, as darkness will very shortly be upon us; so, leaving the body as it is till the following morning, we are once more galloping homewards in single file. There are no more halts this time for arguments; all are full of mirth and make the still night ring with song and shout all the way. As we approach the zareba, those left behind are drawn up in line outside and present arms; for the head man, of Aden education, has taught them this. The merriment that evening was immense, especially as in the morning of that day I had slain a lion, and I felt that if I needed a quiet night it would never do to kill any more animals. My back, too, was aching somewhat, from the repeated good-will slaps which had been bestowed upon me all round. Success in *shikar* the Somali assuredly loves, while at the reverse he shows his dislike by a very sullen and gloomy frame of mind and is then best left alone. Surely they are infantile.

Early the following morning we walked out to the spot where the rhino fell, shooting some *Awal* on the way; we cut up the hide, a process requiring hard work and sharp knives, into pieces varying from one to two feet square, and placed them upon the camel we had brought with us, hanging them in all directions as one would decorate a Christmas tree. Afterwards I divided the pieces of hide amongst the men, who make the much coveted shield out of it, a foot or so in diameter.

In regard to the lions, or *libah*, of the country, they are nearly always to be found at no great distance from the *karias* or settlements of the different tribes, and are hardly ever met with in desert places away from the flocks and herds, the property of mankind. This is natural, for the *libah* finds it an easier job to steal a sheep or camel than to stalk and capture the more watchful antelope, gifted as it is with a greater instinct of danger. Neither is the *libah* dependent upon water for his daily existence, for he can go, according to the Somalis, for months without it. Perhaps the blood of his booty, or the early morning dew, suffices. One method of shooting them,—and decidedly the most *Rajahlike* form but one which deprives the sportsman of a portion of his daytime, for he cannot work both night and day,—is to make a zareba and watch at night-time inside it while a bait, a donkey for choice, is tied up close by, to lure the *libah* in front of the zareba to be shot down. The zareba is made of very thick thorn bushes, perhaps 10 feet high, so that no animal can leap over or penetrate it, a small hole being left for the muzzle of the rifle, which is only 3 or 4 yards from the poor donkey. You enter this zareba by a small opening which is securely fastened again by men outside who then retire, and, as you wait at nightfall inside this little thorn fort, you hear sooner or later the pat-pat pat-pat of his soft tread as the lion approaches and creeps round the zareba only two feet from your head, which, for all that, is as safe as in your own bungalow, protected as it is by the thick thorn partition. As he comes opposite the muzzle of your rifle, you merely pull the trigger; for a few moments you cannot see very much by reason of the hanging smoke, then perhaps your excitement is appeased a few minutes later by the sight of a dead lion or a dead donkey. When, after returning late to camp, you awake the following morning, the freshness and consequent light-heartedness which add so much to the pleasure when starting forth on another day's sport, are absent.

This depressing night work I have tried, and can compare it but unfavourably with the more interesting and exciting work of tracking by day. You rise at early dawn, and possibly even just outside your own zareba,—but sometimes not until after some hours of search, and sometimes not at all,—you discover the fresh tracks of a lion. By fresh tracks are meant those made during the previous night; these in your own opinion are always unusually large, and you say "By Jove, he must be a big fellow with a fine black mane," and, with that impression upon your mind, you commence the track with a real object in view. Taking 3 or 4 men with you as trackers, you find it easy enough work over the soft sand, but where the ground is harder and the grass has grown thick and close, the

powers of the ablest trackers are tried to the utmost. While advancing in single file, the man in front, who is following the tracks, will suddenly give a sign, by snapping his thumb and finger together, that he is at fault ; then one of those in rear will at once start out to the right and another to the left and, by making circles, almost invariably in a short time hit off the track again. Thus you progress sometimes quickly, at other times only after much arduous search and doubt. You can generally guess when you are likely to be near the *libah* by his pugs which show when he has begun to walk slowly, for he generally does so, before he decides upon a spot beneath a tree or a thicket wherein to lay up for the day, after the prowl by night. At the end of an hour or so, or it may be after 6 or 7 hours, you at length come upon the object of your search. It is however, as a rule, of but little use to continue the track after 1 o'clock, for about that time the *libah* has slept off the results of his gorge over night, and is once more about to start off in search of food ; in consequence he is too much on the alert to allow of anyone coming up with him. To tell a man how to shoot a lion when it has been discovered, would be as difficult as to advise a man what to do if his house were on fire, for it entirely depends upon the circumstances.

On one occasion, I finally came upon a fine-maned lion lying down fast asleep on his side. Slipping off my shoes, I quietly walked up on tiptoe to within five yards of him and shot him in the spine, and, as he awoke and tried to recover himself, I fired the second barrel into his shoulder. On another day, a native came to me saying that a *libah* had stolen a sheep two or three nights in succession from his zareba ; he asked if I would go and slay the brute, for he said he could show us the recent tracks where the *libah* had entered the zareba and departed with his loot. Thereupon we set out and soon enough saw where he had carried off a sheep, and also the spot where he had devoured it ; continuing the track, we at last became convinced by the slow way in which he had been evidently twisting and turning round about the thicket of high grass, that he had been looking for a thicket that suited him best for repose ; as we came to this conclusion our keenness and excitement increased the more. Each thicket we carefully peeped into, each feeling convinced in his own mind that the *libah* must be near at hand in one of them. After turning again for at least the twentieth time, we suddenly came upon him quite close at hand, curled up in one of the grassy thickets ; the sand, the grass and the lion all of one colour helping to deceive the eyesight of the trackers. Fearing an 'uncurl' from one so close at hand, I fired, no doubt too hastily, into the hind quarters which at that moment I took to be his shoulder and head. He answered with a low growl.

and quickly slunk off. We found him again shortly afterwards fifty yards away; for he had divulged his whereabouts by his wrathful growling, his grand head alone visible above the high light-coloured grass in which he was standing. Although I had no desire to come within so short a range of him in his present state, I knew that it would be folly to retire, so fired at him again only hitting him, as we afterwards discovered, in the foreleg; but it is not an easy feat to aim at and strike the fatal spot when you cannot see it. At the shot, out he bounded with a roar, his head with bristling mane erect, a very picture of grand wrath and royal strength; again he quickly vanished from our sight, nor did he make it known to us by his angry tongue whither he had gone. Again, in dismay, we climbed each tree and anthill to try and discover where he was, but all without success. At length we arranged that, while two men kept a good look-out from the highest tree we could find, Nur and Musa, the two *shikaries* and myself should follow up the *libah* and try to track him by the blood. This we did in breathless silence, slowly and anxiously alert with ready rifles. We had only tracked for a little distance, when all in an instant Musa excitedly pulled me from behind; at the same time I saw quite close in front of me the lion's head. How and whence he had thus appeared I could not tell, but bang! bang! went my rifle and Nur's went bang! bang! too; no aim was taken, the thing was the work of a moment and, when the smoke cleared away, we saw at our feet a fine black-maned lion, dead. Two bullets luckily had entered his shoulder and one his head, while the fourth had severed his windpipe. As my *shikaries* set to work with a will to skin this fine fellow, I watched as I lay on my back, huge carrion birds, which from high aloft and far away were swooping down and circling around ready for their meal. Besides the skin, we took what little fat there is, for making *ghee*.

On successful occasions of this kind, the tramp back to the zareba is much enlivened by the joyous singing of the men, who joining arm in arm shout aloud in chorus the whole way, redoubling their efforts when within hearing distance of those left behind who answer in return; while some, more childish, throw themselves about and growl in imitation of the *libah*. On the evening that the lion was killed, the native whose sheep had been stolen by it, came up to me demanding *backshish*; he said it was through the sacrifice of his sheep that I had been able to obtain the *Libah*, and he refused to be in the slightest degree satisfied with the consolation that I had saved the rest of his flock from disaster. A striking instance indeed of Somali avarice! On another day, I found a certain Somali in a *karia*, who had been mauled the previous night by a lion which had invaded his zareba in the darkness and seized him by the leg and arm. So, leaving some

lint and vaseline with the poor fellow, we started off tracking and in about two hours time quite unexpectedly saw a little way in front of us three lions, two of which I believe were females, which at once got up and began to move off ; on chancing a hasty shot at them, another lion aroused by the noise sprang up only a few yards away on my left, having been hidden from view by a small dense bush. As he retreated into some grass behind me, I fired the second barrel at him, then, doubling back, sprang on to an ant-hill, some four feet high, and saw him standing up in the grass quite still, looking dangerous.

Reloading quickly, I fired and hit him in the right side ; he at once replied by springing towards me but fell dead from the second barrel, at the foot of my ant-hill, shot through the chest. Perhaps I have already said too much concerning lion. Suffice it to say, there are some people who maintain that only a wounded lion will charge. This cannot be quite true for I have seen an uninjured one do it ; at the same time the danger is small for a good Somali shikari will never desert his Sirkar. The wound from a lion's claws is more or less harmless compared to that of animals in other countries, by reason of the constant cleansing they get in the clean sand. The two little separate bones found in a lion's shoulder, like a tiger's, should be taken care of, for they can be mounted in gold and made up into very uncommon brooches, and might be much appreciated.

As above mentioned, for nearly the first fortnight, the country we passed though cannot be recommended for good sport or for interesting scenery or cool climate, but is only remarkable for its stony and barren appearance. After passing through the Habi Awal tribe who inhabit the country round Berbera, we next came in contact with the Musabokr. When only a few days march E. by S. of Berbera, we were encamped for the night on an absolutely stony and barren spot beside a desolate looking hill, some 6000 feet high, called Barakwein, from which flowed a tiny stream full of little tadpoles ; numbers of sandgrouse came to drink there. Just before our halt, there had been a slight shower of rain and the sky was overcast and threatening.

At that period of our trip we had not been using zarebas and, even had we wanted to do so, there was no possible means of making one at Barakwein. Just as we were turning in for the night, the men on watch came to us saying that the Musabokr tribe dwelt in the hills behind Barakwein and, if they saw our encampment from above, would come down during the night and attack us. We told them to load their rifles and shoot any body who came, but not to awake us, for we could not conceive any such unprovoked assault in so desolate a spot. We calculated rightly, too, for the night

passed off in peace ; but the following day, after a very hot stony climb and had going for the camels, we saw the flocks belonging to some of the Musabokr on the hill sides, and some of the tribe themselves in the plain below.

So, after all, there might have been ground for the precautions taken by our men on watch the previous night, particularly as when we came up to these Musabokr they did not appear to be very pleased to see us; they informed us that we might have come a better way, and that we should, a little further on, meet the Mahmud Gerad ; at the same time they refused to supply us with any milk, altogether giving us the idea that we were not very welcome.

The Rajuna plain itself, in which they were living, was very stony; while in the surrounding hills there appeared to be but very little grazing for their sheep and goats. The following day, we passed through stony and hilly country, travelling for some distance along the sandy river bed which they called Tug Dor and occasionally coming upon small pools of water ; at a spot called Rujwan where we crossed, there was nice turf and high grasses with large spreading leaves and a fine old shady *Durrie* tree. While shooting some jungle fowl here, I heard voices at no great distance and going in their direction I found two Musabokr, a woman and a boy, with some goats, sheep, and camels. They were astonished at seeing us, and said we should meet the Mahmud Gerad that same afternoon. Towards evening we encamped in the stony Hanik plain, and for the first time resolved to pitch our tents, as storms were brewing around us.

This was a night well to be remembered, for we here discovered that we had two sets of poles for only one tent, but, as a tent is seldom required, it did not really matter very much. On the 10th day from Berbera, we were well in the midst of the Dolbahanta tribe, and finding there was comparatively good grass for grazing, we remained half a day, for our camels required a little rest and more food. Scattered around us were the Mahmud Gerad with numbers of camels, sheep, goats, and hundreds upon hundreds of ponies which were thin and in poor condition. There was nothing to be shot here, not even the common *Dhero* ; on either side of Bur Anod, a hill standing out conspicuous from the plain in a S. E. direction an easy day's march off, there appeared to be nothing but this continuous dry-looking open plain of inferior tufty grass with nothing whatever to relieve it, and, as far as we could gather from the natives, there was no sport to be had in that direction. After interviewing many of the Mahmud Gerad and witnessing some spear throwing and pony *tamashas*, we distributed some *tobes* to those we understood to be the leaders, and moved off in a direction W. S. W. finding for some time nothing but hyenas and

bustard. Soon after leaving these Mahmud Gerad, we made a short march and halted at Goriali, in order to load our water camels before pushing on further, for no one knew quite when we were likely to get more water across the Nogal valley. At Goriali, towards evening, we were visited by a large crowd of the Jamasir tribe, who however came on a peaceful errand; they made us welcome, and bid us stay the morrow and take away with us good reports of the way in which they had treated us, for they said we were the first white strangers to come amongst them. On their approach, our men had prepared themselves, ready with their rifles for something more stirring, and in fact seemed to live in hope of having a *fracas* with the natives; at an earlier date they had frequently joked about the time when we should find ourselves amongst the Dolbahanta. They were always very keen also for target practice in order to better their aim, and appeared to be just as regardless about the number of rounds of ammunition they wasted as they were thoughtless in respect to their own rations, which have daily to be regulated for them.

These Jamasir tried hard by long speeches to persuade us to remain another day to witness their mounted display, but finding we were determined to move off at early dawn, they brought us some sheep and received some *tobes* and *khailies* in exchange. Soon after leaving them, we were traversing the immense Nogal valley, a few miles north of the small mountain range called Bur-Dab; when, early one morning, we unavoidably became the mark for a body of Midgans who, having spotted our *khajila* from a distance, slowly gliding along, straightway bore down upon us bent upon a raid and *loot*. Our men thought the time had really come at last and, after collecting the camels into a mass, loaded their rifles and were only with much difficulty prevented from firing, in their intense excitement, at the enemy as they drew near with shouts. Had they done so, it might have brought a shower of arrows from the Midgans; these however, although about to let go their arrows, were made to discover in time that we were no class of game for, them, armed as we all were. These Midgans, who live by raiding *khajila* and shooting wild animals with their arrows steeped in the black poison of the *waba* tree, were very angry at being disappointed in their plunder, for, when first spotting us from afar, they had thought they were in luck that morning. They told us that they had come from an easterly direction and that we should find nothing to shoot there; soon after they took their departure.

During the remainder of our progress through the valley we met no one else at all, but shot some *oryx*, *awal* and *gerenook*; on arriving at the western extremity of Bur-

Dab we found ourselves amongst the Habr Toljaala tribe, and halted at a spot called Dabba-Bur-Dab. These men were very friendly and anxious to have some of our *oryx* meat, so they brought us quantities of fresh camel's milk for which they received a leg. Camel's milk, when quite fresh, is delicious and sustaining, but, when much more than half a day old, is not to be recommended on account of a strong pungent smell and taste. The Somalis always drink this, and make *ghee* out of other milk. Sometimes on entering a *karia*, they brought us a huge *hans* filled with fresh-drawn milk; after drinking my fill, the men with me passed it round until the whole *hans* was completely emptied. For miles round the spot where we halted, there were numbers of the Habr Toljaala dotted all about, and it is marvellous to think that none of them were able to supply us with water. As we were in need of it, we moved on about a day's march southwards towards Kerrit, where we obtained it, but only of a very inferior kind.

Another day's march S. W. of Kerrit brought us to the neighbourhood of the Gerad Farah tribe who said that lions prowled around their *karias* at night, but, although at Riredubli I saw one, I did not manage to shoot it. At Riredubli, too, the Rer Arasama tribe, who had taken up their abode a few miles off, were objectionable, and stole one of our camels, so that we had to send our shikaries and a dozen men to track and recover it. This was annoying, for it caused delay and made us unwilling to go too far away as we did not know what mischief they would be up to during our absence. Again at Gabad-ano a few miles further on in a S. S. W. direction, they still hovered round us and noisily entered our zareba making themselves decidedly unwelcome. We were, therefore, glad to move on again westwards, where we found the ruins of an old Galla town, and the commencement of an aqueduct which was to have brought ships in from the eastern coast, according to local report. Thence we moved on to the northern portions of the Haud, or waterless plain, where we found ourselves amongst a pleasant friendly tribe, the Habr Garhajis, the country passed through being, for the most part, composed of *khanss* and *mimosa* bush, and firm red sands with an occasional grassy open plain. These Habr Garhajis had shifted down southwards in order to avail themselves of the excellent grass for their herds and flocks, and whithersoever they shifted they appeared to be followed by lions. Their head-man, Sultan Nur, made himself even too pleasant, for his constant visits were of long duration and broad hints never seemed to strike home.

It was on our arrival amongst these people, that my companion Malcolm unfortunately found that his leave was expiring and that it

was necessary for him to make tracks back to Berbera. Before doing so, the separation and division of men and goods had to be got through; for, up to date, everything had been equally shared. The men were the most difficult, for some wanted to go back, others to continue southwards with me; while others could not make up their minds, for they wanted to do both. This division was only at length accomplished after much talk and excitement; the camels and rations caused another boisterous hour or two, for each lot of men wanted the best camels and the most rations. However, having settled this too, we resolved before separating to hold a *Gymkhana*, giving small prizes in money to the winners.

This was a most popular move of ours, and showed in what direction these men's minds are bent, for nearly every man entered for every event with the greatest enthusiasm. Curiously enough, the first two events on the programme, the high jump and the long race, fell to one and the same man, who for all that had been so ill the night before as to require copious doses of castor oil, and even a repetition of it on the morning of the sports. Next came spear-throwing and rifle practice, when they were all as keen as mustard and as excited as children. When it came to the final which was a tug-of-war composed of eight of Malcolm's men against eight of mine, the former loudly clamoured that their strongest men had gone away for water, and that the conditions of the tug were consequently unfair and that therefore they refused to pull at all. "Very well," we said, "if that is the case and you have not sufficient pluck to have a try, the prize is won by the other side." On this, those who considered themselves victorious, madly cheered. This was at once sufficient to alter the determination of the other side, who saw their best plan was at least to try a pull.

We took a rope from one of the camels, and, when the two sides had arranged themselves on either end, well wound up to intense keenness, we gave the signal to lay to. As might be supposed, a single camel rope was unable to withstand the strain of 16 men; it at once snapped in two, throwing back both parties into a confused mass. Thereupon their excitement became greater, and, while three ropes were being twisted together, they could not contain their feelings for a single moment but continued to make a deafening uproar. The second time, the rope was strong enough and, after a tough battle, Malcolm's men had all been pulled over the mark with one exception; suddenly the other side seemed somehow to lose all their strength, for, amidst frantic feverish enthusiasm, men hanging on even with their teeth, Malcolm's side pulled them all back again and won. Upon this, Malcolm and I sat down quietly for half an hour till their terrible state of madness had abated. Some men were

throwing themselves into the air to fall flat on to the ground, then rising up again cast sand about in all directions ; they repeated the same childish foolery over and over again, while others, completely done up, for it had been a long hard pull, lay prone upon the ground.

An hour afterwards, my camels were loaded and I was starting off to march away southward, receiving many hearty handshakes from those left behind. Such occasions as this just described, bring to one's notice many good points to be found in the character of the Somali.

I spent some days amongst the Habr Garhajis, shooting lions, *oryx*, *gerenook*, etc., always meeting with every kindness and help whenever I required anything. Sultan Nur himself travelled about over his country and generally managed to turn up wherever I happened to be. He took much interest in picture papers and was cleverer than most Somali men in being able to understand them, but he was incapable of realizing why it was that the picture of the side face of a certain head should have only one ear. He stubbornly maintained that the artist had forgotten one ear.

After leaving the Habr Garhajis, I worked S. W. to Daror, finding a little water had accumulated there from some recent rain, but it was quite evident that only sometimes could one rely upon obtaining it. On this occasion, it was about a couple of inches deep, supplemented by many more inches of black mud; we all took the opportunity in the evening of our arrival to take a good bath, and afterwards to shoot a few ducks and jungle fowl, for there were some reeds, green grass and bushes. Quite early the following morning before daylight I imagined that I was dreaming, but discovered on rising that great numbers of camels belonging to the Habr Garhajis were being laden with water and quickly driven away again.

This was carried on with continuous noise and shouting, and not in silence as might be expected ; a little later that same morning, after they had all departed, a small army of Ogaden men mounted on fairly stout ponies came galloping up from the south. They had received *khubber* of the arrival of the Habr Garhajis, and had hurried up to dispute their right of taking the water away. It was most fortunate, and I was thankful they had not come a few hours earlier, for there would certainly have been an awful row and not improbably some bloodshed. These Ogaden men were a wild-looking lot of chaps, who entered keenly into my suggestion to race for prizes. They afterwards gave a *tamasha* for my benefit, which consisted in dividing themselves into two opposing bodies and entertaining me with a sham fight, receiving *tobes* in

return. They were courteous enough, despite their rough manners, to invite me down south to remain amongst them for some time.

After leaving the Ogaden people I travelled somewhat westwards, and lived for a few days amongst the Galla tribe who had moved a good deal more eastwards than is their custom, shifting, like the Habr Garhajis, for the sake of the good grass to be got for their flocks and herds. They were pleasant people enough to live amongst, and always shewed great interest in all my doings and belongings. They brought me a young ostrich and a young lion, 6 months old, neither of which, however, had I time and means to carry about the country with me.

It was amusing, one evening, to find a crowd of Galla ladies advancing in the direction of my zareba; on Deerfoot, my head-man, enquiring why they were coming and what they wanted, they replied that they had come to look at me. At the moment of their arrival I chanced to be endeavouring to take my tub in a few pints of dirty water, and was thereupon compelled to curtail this comforting function and listen to the beauties of Somali Land singing in shrill notes and clapping their hands as they danced round in a circle. Some of them wore a black net over their hair, while others equally rejoiced and were happy without it; the latter were thus distinguishable as having not yet been appropriated by some male as personal property. I was soon satisfied with their performance, and, having distributed some looking glasses and bangles amongst them, bid them adieu for the present as they retraced their steps. When passing by their *kuries* on another day, the net-less maidens drew my attention by making a rattle-like noise by moving the tongue quickly from side to side in the mouth; they then scampered away out of sight within their circular homes, which consisted of camel mats thrown over long whippy sticks bent into the ground. In the very early morning and at night also, I used to receive from these good people a *han* filled with fresh-drawn milk, but I always found a quantity of "blacks" swimming in it. Not being able to account for this, I asked the reason, and was informed that it was found necessary to clean the vessel each day, and as there was practically no water, at any rate not to be spared for this sort of thing, they managed to do it by holding the *hans* over a wood fire until the creamy sides became transformed into a black colour.

These people possessed some good ponies, far superior to those of the Dolbahanta and, if anything, a shade better than those of the Ogaden tribe.

Although I could not go as far west as Milmil, I was told that the shooting in that direction and towards Harar and Eild.

Range, as well as more southwards to the Webbi, was excellent for elephants, rhinos and lions, besides the less dangerous fry. Despite the wishes of my two keen *shikaries*, Nur and Musa, to go there, I was obliged by reason of that ever-haunting word "leave" to quickly wend my way back to Berbera. *En route*, I passed over the Toyo plain where I saw immense numbers of *Awal* and some of Swayne's *Hartebeeste*, which in some parts of Haud are plentiful enough. Shortly after traversing these dry monotonous plains, it was pleasant to find oneself again surrounded by the *khansa* bush and, the following morning, amongst the *karias* of the Habr Awal who brought me in fresh cow's milk. We halted half a day for all to enjoy the luxury of a real bath in some fresh deep pools of pure rain water, and to let the camels revel in the green grass and shady trees. I enjoyed, too, knocking over a few guinea fowl and hares.

These, however, the Somali will not eat, neither does he care for fish; spirits are his abomination and I saw very few who cared to smoke. Soon after leaving this delightful and much appreciated spot, named Dohogun, we passed along the beautiful Golis range with its fresh invigorating sea breezes, down into the deeply wooded and well-watered Maudeira country inhabited by the great and lesser *koodoo*, the lion, and leopard.

After traversing this range, we entered the stretch of country called Guban and found it decidedly hotter than the cool bracing districts of Ogo, which lie at a higher elevation on the other side of the hills.

When walking over these maritime plains, one feels the power of the midday sun although the warmth is welcomed by those who travel further inland; for no one could call the climate anything else but congenial, as neither is one compelled to retire into obscurity from the blaze of the midday sun nor to shiver at the closing in of night time.

It is a very good plan to halt the *khajila* a few miles outside of Berbera the last evening, and then to march in, figuratively speaking "with trumpets blowing," fresh, spick and span, at the glorious rising of the morning sun. By this means there is ample time to unload and arrange matters properly, whereas by arriving at night time, the necessary work is likely to be hastily and carelessly done by the members of the *khajila* who are generally only too delighted to reach their dear old Berbera again; to their unsophisticated minds it is equal to Paris, and they imagine that Berbera is the gayest place in the world.

One's first desire on arrival at this harbour, both of land and sea, is to be rid of the camels, mats, *hans*, &c., which serve now only as encumbrance. This is managed by summoning from the bazar the auctioneer or *harashwalla*, who having

prearranged with you to take a percentage of the profits, straightway publicly announces the fact that the Sirkar's camels, &c., are to be sold to the highest bidder at such and such a time and place; this news very quickly spreads through the population of the bazar, which varies from a few thousand to twenty or thirty thousand in the trading season. At the appointed hour you take your seat outside the bazar, which is only half a mile from the Residency; all your men are present with the camels and goods, and now the auction commences and the crowd of natives speedily thickens. Several camels are generally bought by your camel-men themselves. The *shikaries* stand behind your chair to receive the rupees which are paid on the spot. As the auction progresses, the merry crowd grows larger and gradually draws in closer and closer, so that there is hardly even room for breathing, let alone for the camel to be brought forth and exhibited. The proceeds of the auction help in a slight degree to pay off a few of your followers, who also look forward to receiving *back-sheesh*, a chit of recommendation, and a good shake of the hand before leaving you. Everything is finally settled up and finished, and perhaps a couple of spare days remain to be spent before the *Tuna* or *Sheikh Berkhud* finds it convenient to come and waft you back to Aden. This spare time may be spent in a visit to the hospital where one can see how inadequate are the means and appliances, and how numerous the patients. The hospital itself consists merely of four bare walls, into which the patients are taken at night time and put out again on the hot dusty road by day; they suffer chiefly from incurable sores and consequent loss of limbs amputated by the one, and only, under-grade apothecary, who has his hands too full; for all that, he does his work wonderfully well like a Briton, which he is not, and as a rule most successfully. I feel sure he must have chopped off enough limbs to make a small army. The inmates, or rather portions of them, as they lie about in the hot sand appear absolutely callous as to their loss; their kind and thoughtful relations often come for their allowance of 2 annas a day with the full intention of bringing food, but somehow or other depart and forget to return. When you give them food, they only seem surprised that you didn't give them more; one exception was that of a poor fellow who was lying on his back against the hospital wall, with some boards leaning over him to keep the sun off, and whose shank bones were conspicuous, for they had neither flesh nor skin upon them. Upon our pouring a little milk down his throat, he promptly succumbed.

Having seen this, the Egyptian lighthouse a couple of miles off, the bazar, and other small sights, some excellent sea fishing may be enjoyed if one has a good fishing rod; yet in lieu of this mo-

dern weapon a prehistoric apparatus will catch them at the end of the landing pier, a fact well exemplified by the numbers of cheerful Somali boys, who add to the fun by an occasional friendly scrimmage and splash-splash into the clear blue sea. If you are a bit of a conchologist, many hours with valuable results may be spent along the coast.

But here's the *Sheikh Berklud* and your trophies are on board. As you watch the few white bungalows of Berbera planted along that desolate Somali coast grow gradually smaller and smaller, you turn your head away to think of other things, and your only regret is that you have not the power to say "I'll soon be back again."

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OCCASIONAL NOTES.

A French paper points out that the French artillery is not in an entirely satisfactory condition, in proof of which it refers to the average peace establishment of one of the regiments of twelve batteries. This regiment is part of a brigade of normal strength, and the paper points to it as an example of the condition of the greater portion of the French artillery. Each battery has 99 men, but of these more than half, or all the older soldiers, are detached on special duty, leaving only a small number of young soldiers fit for service. The paper, commenting on this, says that it is necessary to increase the establishment at the same time that the length of service is decreased.

Last winter, both in France and Germany, experiments in firing at snow breastworks were carried out. In Germany the firing was carried out during winter manœuvres, and it was found that works made of snow from 1 to 2 metres in thickness did not afford sufficient protection to men in rear. In France, however, it was found that a snow wall, 2 metres thick, was a sufficient protection against bullets fired from a distance of 50 metres. The Lebel rifle bullets, found embedded in the snow $1\frac{3}{4}$ metres, had not altered in form.

A collapsible bicycle has been contrived in France for military purposes. It can be carried, it is said, comfortably on the shoulder; or, when folded up, strapped on the back. For the latter operation only 30 seconds are required. The machine weighs 27 lbs. and requires no key to close it up.

A new Spanish mountain gun is about to be tried. Its calibre is 2.24 inches, weight 190 pounds, charge a little over $\frac{1}{2}$ pound of ballistite, and initial velocity 1308 feet.

An interesting feature of the autumn manœuvres in Germany will be the assembly of four Army Corps in the neighbourhood of Stettin, which will be collected from Pomerania, Brandenburg, Schleswig-Holstein, and Hanover. The total strength of these corps is stated to amount to 100,000 men, but on a peace footing the numbers will probably be considerably less. The force will, however, be the largest ever assembled in Germany for manœuvre purposes. The

troops are to be sent back to their districts in no less than 380 trains, and this experiment in transport will doubtless be watched with much interest on the Continent.

The Russians made an experiment in Transcaspia in September 1894 in moving mountain guns with the help of camel transport. Carrying the guns on saddles did not prove a success. They were then placed on limbers with special shafts and thus dragged along by the camels. This was found satisfactory except where there was much undergrowth.

Some trials with war dogs have taken place at Dresden. They communicated regularly and rapidly with patrols about a mile distant, and, in engagements, they carried ammunition on saddles with which they were equipped. One dog carries 250 ball or 350 blank cartridges. They also proved useful in bringing aid to the wounded, either by barking loudly or by carrying to their masters the head-dresses of the wounded men.

A new arrangement has been introduced in the Austrian Army for facilitating the transfer of the load from one railway truck to another without unloading. This is effected by means of a travelling platform, or false bottom on rollers, by means of which the whole truckload can be easily loaded and unloaded or transferred bodily, say for instance from a truck of the ordinary gauge, to a truck on a narrow-gauge line. As the latter trucks are smaller they are coupled in pairs in order to receive a heavy load. In this way 6-inch fortress guns, mounted on their carriages, could be loaded on railway trucks, unloaded or transferred in the space of from ten to forty minutes at the Vienna Arsenal station, without any special mechanical appliances. This system will be useful at the junctions of narrow-gauge field railways with the ordinary railway lines, and, in the event of a war with Russia, for transferring truckloads to the cars of the wide-gauge Russian lines.

According to the German papers the number of medical men killed or wounded in the late China-Japan war.

Medical casualties, China-Japan war. Japanese war amounted to the extraordinary proportion of four per cent. of the entire total of the casualties. The chief cause of these fatalities is attributed to the very long range of modern firearms, whereby surgeons attending to the wounded while a battle is going on are far more exposed than formerly to danger from rifle fire. It is doubtful whether it will be practicable to carry on bandaging operations during an action much further back from the front than at present, because the first help must be given to the wounded as near as possible to where the fighting is going on.

Aluminium is about to be tried more extensively to reduce the weight carried by our soldiers in marching order. A beginning is to be made with the canteen or mess-tin, and mess-tins of aluminium will shortly be issued to our troops at home; the article now in use weighs with cover one pound ten ounces; the use of aluminium ought to reduce this weight by nearly 1 lb. If aluminium were also used for the metal fittings, such as buckles, &c., on the equipment, for the water-bottle, and for the parts of the intrenching tool, for which it would be suitable, about 2½ lbs. of weight could be taken off. As the Slade-Wallace equipment, complete with rifle and bayonet, but without ammunition, weighs only a little over 34 lb., or about 10 lb. less than the weight carried by the Austrian soldiers, with the exception of ourselves the most lightly weighted infantry in Europe, it is doubtful whether any sufficient advantage would be gained to compensate for the expense involved.

The German War Office recently tried the effect of loads on the march of soldiers. Five students volunteered for the experiments, and marched a distance of about fifteen miles, loaded with forty-eight pounds, fifty-nine pounds, and sixty-five pounds. The first weight proved no inconvenience, the second caused a fatigue which a good night's rest removed, the third produced what are called "ill-effects."

A comparison is made by a French paper, as to the weight carried by the soldiers of the principal European armies. The French infantryman, with full field equipment, carries 63 lb., including 120 cartridges; the German, according to the latest arrangements, carries 58 lb. only, which nevertheless includes 150 cartridges; the Russian carries 65 lb. including 84 cartridges; the Italian 60 lb. including 150 cartridges; whilst the Austrian has the lightest equipment of all, viz., 47 lb. only, including 100 cartridges.

Whilst French papers report on experiments made with a view to getting a high muzzle velocity out of a large-bore rifle, with a new cartridge, a German contemporary is cautioning against too ready reliance on the claims advanced in favour of small bores. Thus a perfectly flat trajectory, within a range of 1090 yards, is claimed for a new 0.197-inch bore rifle with a muzzle-velocity of 2788 f.s., whilst any one who is experienced in ballistics can easily calculate that, with the muzzle velocity stated and a projectile of average sectional load, the flatness of trajectory could not extend much beyond 650 yards. But ballistic performance is not everything. The value of a rifle will largely depend on its remaining in efficient condition for a reasonable time and being quickly and easily

cleaned. Even the introduction of the 0.315 bore rifle, together with smokeless powder and projectiles with steel envelope, is found to have greatly enhanced the difficulties of cleaning in Germany, and the high velocity leads to a rapid wear of the "flats" of the rifling and a consequent deterioration of shooting. The smaller the bore, the more pronounced, of course, will be these disadvantages. The high gas-pressure must also impair the durability both of cartridge cases and of the breech. On the other hand very small bores, as compared with the 0.315-inch bore, are superior in ballistic performance at short and medium ranges only, but not at long ranges, and the smaller projectile is bound to be more affected by wind at long ranges. The writer of the article does not mean to say that a further diminution of bore is precluded for all times, but at present, at any rate, there is no need for the Great Powers, who are still armed with 0.315 bores or thereabouts—except Italy, who is slowly introducing the 0.256, and Russia, who has just introduced the 0.300—to be in any great hurry to think about adopting a smaller bore.

Experiments have been made in Austria in order to test the likelihood of a balloon being hit when fired at. A captive balloon, at an altitude of about 4265 ft., was fired at from a distance of 4400 yards, and was struck nine times without being brought down. In a second trial a captive balloon, at a height of about 2625 ft., was fired at from 5500 yards' distance. A violent wind, causing the balloon to plunge a good deal, rendered the aim very difficult, and the balloon was not brought down until after the fifty-sixth round. In our contemporary's opinion it would therefore seem possible without too much risk, if the point of observation be well chosen, to take a rapid survey of the enemy from a balloon, but as the second trial, at any rate, was made under exceptional difficulties, it would be rash to draw conclusions therefrom.

The German War Balloon Department is at present experimenting with a new kind of balloon called the "kite" balloon. It is in the form of an elongated cylinder, rounded at the ends. Instead of having the car suspended in the centre it has it at one end, to which two smaller spherical balloons are also attached, one on either side of the cylinder. This arrangement gives the balloon a certain stability against the wind, and as moreover the balloon can assume an inclined position, after the manner of a kite (hence its name), the pressure of the wind adds to the ascending power of the gas. Finally, it is hoped that by means of a rudder-sail, placed at the end to which the car is fixed, it will be possible to steer the balloon.

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The Journal
OF THE
United Service Institution of India.

VOL. XXIV.

1895.

No. 122.

“TRIA JUNCTA IN UNO.”

(A SUGGESTION.)

By “UNITY.”

The consolidation of the three Presidency armies of India is now a *fait accompli*, but it is to be feared that it will take a long time to efface all the old prejudices and customs of the past, and it is presumed that anything which will tend to perfect the new Army Scheme will be met on its merits; this emboldens the writer to present the following suggestions to the criticism of the readers of this Journal.

Owing to the situation of Army Head-quarters and its offices, the Northern troops are likely to be the most favoured ones, being in closer contact with their commander, but a revised nomenclature of the various regiments constituting the four army corps would help to assimilate this large force and eliminate the incongruities of the present Presidential titles; especially in regard to their relations with the Army departments and with their own officers, who have now ceased to belong to separate lists.

The Staff Corps officer of the present day is almost entirely a product of the Royal Military College at Sandhurst in the person of the cadet who is commissioned in the unattached list. There is little or no doubt that this should comprise cavalry and infantry in separate lists as is done for officers of the British service. The present uniform of the unattached list enables an officer to join most of the Indian infantry regiments without much additional expenditure; but if he goes to cavalry he is faced with an outfit which for variety and gorgeousness is generally equal to, and often greater than, that of a brother officer in the British service. Added to this heavy initial outlay, officers are continually changing their regiments and, though attempts have been

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made to reduce wanton expenditure by assimilating the pattern of the lace and other details, it must be admitted that there is still much too great variety in dress in the native cavalry of India.

The question is a large one and will require very strong treatment as traditions will lead to much grumbling when the light blue of the south, the green of the west, and blue and other colours of the north are threatened with a general shade for all. But there can be no doubt that it is the duty, as it is the desire, of the authorities to prevent this waste of money, benefitting the army outfitters rather than the army itself, the result of various little distinctions evolved in the course of years by every eight or ten officers constituting a regiment.

Let there be one colour, one pattern of lace and one design throughout and let this be rigidly adhered to, at all events in what is known as the cavalry "British Dress"; let no extra flourishes in tracing, braid or twists in cord be allowed.

Different colours in facings could be retained, as, if the remainder is uniform, a change of facing would be no serious matter; and if thought necessary to the existence of the lancer, let the "piping" be added to the uniforms of all under that class. Perhaps in connection with this, if much resistance was met with, a different tunic for lancers and cavalry might be approved, but there need be no difference in the undress, mess and field kits. There seems no reason why regiments should not retain original colours and designs in their "Native Dress," as in the case of native cavalry the occasions on which "British" and "Native" orders of dress are worn are very distinct.

An arrangement as suggested in the foregoing paragraphs once brought into force, and it will be possible for the Cavalry cadet of the unattached list to have an uniform designed for him which will entail little extra expenditure on his joining his regiment, wherever it might happen to be in India. Thus we should not see officers hampered with heavy outfit bills for a complete change of dress on joining a corps, in which there is plenty of scope for spare cash in many other directions besides uniform.

A word on the subject of native infantry uniforms might not be out of place at this period. The Gurkhas and other Rifle corps are of course best suited in the distinctive dress they have, but there appears no necessity for a deviation from the British scarlet for the remainder; excepting the case of the Baluch regiments who naturally require a contrast to their red trousers. There are several regiments possessing elaborate drab uniforms, but unless there be some particular necessity for this departure, it can but constitute an extravagance to officers on appointment from the unattached list or other corps, which can be easily remedied without detriment to the army at large.

So much for the assimilation of dress, but now we are faced with a problem for assimilation of regiments and titles, and more generally uniting the native forces of the country. The Presidencies have gone under with their "Histories," why cavil and leave the huge project of April 1895 incomplete!

To commence with the cavalry, a reference to the Army List shows that force in India to consist of,—

- 3 Corps of Body Guards.
 - 19 Regiments of Bengal Cavalry.
 - 4 Regiments of Punjab Cavalry.
 - (these, with the Guides Cavalry, rank after the 8th Bengal Cavalry)
 - 3 Regiments of Madras Cavalry.
 - 7 Regiments of Bombay Cavalry.
- to which must be added the Aden troop.

Besides the above there are the regiments and corps under the Government of India which it is presumed will remain as such, though there is no reason against their uniform and appointments being assimilated.

Thus we have to deal with the 3 Body Guard corps and 33 regiments of Line Cavalry besides the Guides and the Aden troop. The Body Guards can remain as at present, no necessity for any alteration in their case being apparent; with the remainder we form 34 regiments, the Aden troop remaining as it is or being extra to one of the Line regiments. The next difficulty is to number and name them. There is no doubt that this should be done consecutively from 1 to 34 and the order of precedence should be, as at present in the Presidential cavalry, according to the date of the regiments being raised, subject to, if necessary, the one or two slight irregularities which exist but for which there is presumably reason.

For names "Indian Cavalry" or "Indian Lancers," as the case may be, are suggested, with the serial number and such prefixes or additional titles as various regiments are entitled to bear.

Acting on this system the following list will furnish a satisfactory solution for the consolidation of the native cavalry of India:—

Household Cavalry.

- The Governor-General's Body Guard.
- The Governor's Body Guard (Madras.)
- The ditto ditto (Bombay.)

Cavalry of the Line.

Proposed Title.	Present Title.	Raised.
1st Indian Lancers.....	1st M. L.....	1787.
2nd ditto	2nd M. L.....	1784.
3rd ditto	3rd M. L.....	1784.
4th Indian Cavalry.....	1st B. C.....	1803.
5th „ Lancers.....	2nd B. L.....	1809.
6th „ Cavalry.....	3rd B. C.....	1814.
7th (D.C.O.) Indian Lancers.....	1st Bo. L.....	1817.
8th „ „	2nd Bo. L.....	1817.
9th (Q.O.) „ Cavalry	3rd Bo. C.....	1820.
10th (P.A.V.O.) „ „ (Poona Horse)	4th Bo. C.....	1817.
11th „ „ (Sindh Horse)	5th Bo. C.....	1839.

Proposed Title.	Present Title.	Raised.
12th Indian Cavalry.....	4th B. C.....	1840.
13th " "	5th B. C.....	1841.
14th (P.W.O.) Indian Cavalry.....	6th B. C.....	1842.
15th " "	7th B. C.....	1846.
16th " "	8th B. C.....	1846.
17th (Q. O.) " " (Guides).	Guides Cav.....	1846.
18th Indian Cavalry (Jacob's Horse)..	6th Bo. C.....	1846.
19th (P.A.V.) Indian Cavalry.....	1st P. C.....	1849.
20th Indian Cavalry.....	2nd P. C.....	1849.
21st ditto	3rd P. C.....	1849.
22nd ditto	5th P. C.....	1849.
23rd Indian Lancers.....	9th B. L.....	1857.
24th (D.C.O.) Indian Lancers.....	10th B. L.....	1857.
25th (P.W.O.) ditto	11th B. L.....	1857.
26th Indian Cavalry.....	12th B. C.....	1857.
27th (D.C.O.) Indian Lancers.....	13th B. L.....	1858.
28th Indian Lancers.....	14th B. L.....	1857.
29th (Cureton's Multani) Indian Lan.	15th B. L.....	1858.
30th Indian Cavalry.....	16th B. C.....	1857.
31st ditto	17th B. C.....	1858.
32nd Indian Lancers.....	18th B. L.....	1858.
33rd ditto	19th B. L.....	1860.
34th ditto (Belooch Horse)..	7th Bo. L.....	1885.

This should settle once for all the nomenclature of the Indian cavalry whose regiments seem to have suffered numerous changes of title during the comparatively short period of their existence, the existing names being very different in most cases to those under which the corps were raised.

Infantry.

The infantry presents more difficulties on account of its size and distribution than the cavalry, and on this account deserves an equally bold, if not bolder, treatment. To carry this out, it is proposed to make use of the system of regimental centres, a modern innovation and presumably a satisfactory one. It makes regiments territorial and simplifies the "Class" system which is now the order of the day in the Punjab, Bengal and Bombay Commands.

The proposition therefore is to make the existing linked regiments into the battalions of one common regiment, taking its name in most cases from the regimental centre. Difficulties will occur in the titles and seniority of certain individual corps but it is impossible to satisfy all, and the changes can never be so great as those carried out with the British infantry, nor could they be so deeply felt as there are few native regiments whose names and numbers have not already gone through several alterations.

Now that all the "Class" and "Link" details have been so carefully worked out, it would be practically impossible and most undesirable to re-arrange the order according to the dates on which regiments

were raised; a feasible matter with the cavalry, which it is to be hoped will prove sufficient to satisfy the most ardent adherents of the old Presidency armies.

This means that regiments must take precedence according to their original senior "Link" regiment and also in the order of the Presidencies, namely Bengal, Madras, Bombay subject further to the rules of procedure affecting the Gurkha regiments and the Punjab Frontier Force.

A careful study of the Indian Army List will therefore furnish some excuse for the following alterations:—

Infantry.

No. of Bns.	Proposed Title.	Present Title.
2	The Allahabad Regiment.....	1, 3 B. I.
3	" Agra "	2, 4, 16 B. I.
2	" Bareilly "	5, 12 B. I.
3	" Meerut "	6, 10, 13 B. I.
3	" Lucknow "	7, 8, 11 B. I.
2	" 1st Gurkhas	1st Gurkhas.
3	" Ferozepore (Sikh) Regt.....	14, 15, 45 B. I.
2	" 2nd Gurkhas.....	2nd Gurkhas.
2	" 3rd "	3rd "
1	Guides.....	Guides Infantry.
3	" Edwardesabad Regiment...	1, 3, 4 Sikh I.
3	" Dera Ismail Khan "	1, 4, 5 P. I.
3	" Kohat Regiment.....	2. S. I. 2, 6 P. I.
2	" 4th Gurkhas.....	4th Gurkhas.
2	" Benares Regiment.....	17, 18 B. I.
3	" Multan "	19, 22, 24 B. I.
3	" Jhelum "	20, 21, 26 B. I.
3	" Punjab Pioneers	23, 32, 34 B. I.
2	" 5th Gurkhas.....	5th Gurkhas.
*4	" Rawal Pindi Regiment.....	25, 27, 28, 33 B. I.
3	" Peshawar "	29, 30, 31 B. I.
2	" Jullunder (Sikh) "	35, 36 B. I.
2	" Sialkot (Dogra) "	37, 38 B. I.
2	" 6th Gurkhas "	9, 39 B. I.
3	" 7th Gurkhas "	42, 43, 44 B. I.

This arrangement only leaves the 40th Pathans undecalt with. They might well constitute a 2nd battalion to the Guides or a 3rd battalion to the Baluchistan regiment (see later.) The only regiment losing seniority to any great extent is the 9th B. I.; but it would be inadvisable to upset the existing numbers of five 2-battalion Gurkha regiments for the sake of a single regiment.

* Should 4 battalions be considered unsuitable, the 33rd B. I. could be added to some regiment having less than 3.

To continue we have—

No. of Bns.	Proposed Title.	Present Title.
3	The Madras Pioneers	1, 4, 21 M. I.
3	„ Secunderabad Regiment....	2, 15, 16 M. I.
2	„ Trichinopoly (L. I.) „ ...	3, 23 M. I. I.
3	„ 1st Madras Regiment.....	5, 9, 11 M. I.
2	Bellary „	6, 14 M. I.
3	Belgaum „	7, 19, 24 M. I.
3	Bangalore „	8, 17, 25 M. I.
3	Pallaveram „	13, 20, 22 M. I.
3	2nd Madras „	26, 27, 28 M. I.
1	Burma Rifles	!0th M. I.
3	1st Burma Regiment	12, 29, 33 M. I.
3	2nd „ „	30, 31, 32 M. I.

It will be observed that in the case of the Madras regiments very little alteration has been suggested, merely the grouping of the Burma battalions and this has been done with such regard to their present “Class” arrangements as is possible.

To conclude the Infantry we have:—

No. of Bns.	Proposed Title.	Present Title.
3	The Ahmednagar Regiment.....	1, 8, 9 L o. I.
3	„ Deesa „	2, 12, 13 Bo. I.
3	„ Satara (L. I.) „	3, 5, 10 Bo. I.
3	„ Bombay Rifles.....	4, 23, 25 Bo. I.
3	„ Bombay Pioneers.....	7, 21, 28 Bo. I.
3	„ Poona Regiment.....	14, 16, 17 Bo. I.
3	„ Mhow „	19, 20, 22 Bo. I.
2	„ Baluchistan Regiment.....	24, 26 Bo. I.
3	„ Baluch Rifles	27, 29, 30 Bo. I.

In this last case changes will be noticed, principally the formation of two “Pioneer” battalions from the 7th and 21st Regiments neither of which has a Link corps at present and the “Class” system in all three being almost identical. There have been many rumours of reorganizing the 21st (Marine Battalion) so that a favorable opportunity now presents itself to raise the Pioneers in Bombay to the strength of the Bengal and Madras corps. A third battalion to the “Baluchistan” regiment might be formed as previously suggested from the 40th Pathans.

This concludes the proposed scheme for the reorganization of the native infantry to meet the requirements of the new Army Scheme, and consolidates and assimilates this body into 44 regiments possessing in most cases 3 battalions each.

The Artillery and Sappers of the Indian Army only remain to be dealt with, and these present no difficulties to overcome. The “Native Artillery” becomes a Corps of 8 Mountain Batteries and 1 Garrison Company, and the 3 Corps of Sappers and Miners turn into one Corps of

22 companies; thus the absurdity of officers of the Royal Artillery and Royal Engineers serving under Presidential conditions is done away with, a system which in the case of the latter corps leads to great eccentricities in local promotion and status.

Therefore we have:—

Proposed Title.				Present Titles.	
"Native Artillery."	{	No. 1	Mountain Battery.....	No. 1	(Kohat) M. B.
		No. 2	Do. do.	No. 2	(Derajat) M. B.
		No. 3	Do. do.	No. 3	(Peshawur) M. B.
		No. 4	Do. do.	No. 4	(Hazara) M. B.
		No. 5	Do. do.	No. 5	(Bombay) M. B.
		No. 6	Do. do.	No. 6	(Bombay) M. B.
		No. 7	Do. do.	No. 7	(Bengal) M. B.
		No. 8	Do. do.	No. 8	(Bengal) M. B.
	{	No. 1 Garrison Company.....		Punjab Garrison Batty.	
		and			
"Sappers and Miners,"				{	Bengal S & M., Madras S. & M., Bombay S. & M. of 8, 9, and 5 companies respectively.
No. 1 Company to No. 22 Company					

An arrangement which, on the whole, would give a simpler and more consolidated Army List than exists at present.

RECENT PAPERS ON AMBULANCE AND FIELD MEDICAL ORGANIZATION.

By Surgeon-Captain C. H. MELVILLE, A. M. S.

- (1) Medical aid in the first line in future war. By Dr. Hermin Fischer in *Streffleur's Oesterreichische Militarische Zeitschrift*, May 1894.
- (2) The medical service with an infantry division in the field. Illustrated by a concrete example. By Major Alfred Hausenblas (General Staff, Austro-Hungarian Army). The same periodical, November 1894.
- (3) Our Sanitary Detachments, and their management in action as affected by modern fire-arms. By V. Kries, Lieutenant and Adjutant in No. 17 Train Battalion (German) in *Jahrbuch per die Deutsche Armée und Marine*, April 1895.

The above noted papers are of interest as giving an idea of how the question of the removal of the wounded from the field of battle in the future, strikes officers of Continental armies, and of the changes that they anticipate will be necessary, in view of the recent advances in armament, in that of the infantry in particular.

As regards the nature of the wounds that may be expected to occur, Dr. Fischer follows Habart's conclusions in general. He relates two highly interesting cases of attempted suicide in which the Austrian Mannlicher bullet (.315 calibre with a muzzle-velocity of 2034 foot seconds) entered below the chin, and emerged at the inner angle of one or other eye, passing in each case through the floor of the mouth, the tongue, hard palate, and nasal cavity, in one case also furrowing the frontal bone; both cases recovered completely. An essentially parallel case was reported by Surgeon-Captain Porter, A. M. S., in the *British Medical Journal* for February 16th of the present year, in which a Lee-Netford bullet after passing through the left upper arm, entered the head one inch below the inner angle of the left eye, and made its exit behind the right ear; in this case also the man recovered with only slight symptoms of paralysis of the tongue. The moral to be drawn from such cases, which Dr. Fischer I think misses, is that owing to their small calibre and great penetrative power, modern bullets can pass in the closest proximity to the most important structures without causing serious hurt, provided only that during their passage through the body, they do not meet with any considerable resistance, or do not pass through semi-fluid tissues. On the other hand if they do meet with great resistance; the destruction they will cause will be directly proportioned to that resistance, and will be very far reaching and severe at all close ranges. Wounds thus will tend to be either excessively severe and probably fatal, or only comparatively severe or slight, according to the resistance they meet with in their passage through the body.

A very interesting quotation was made by Sir William MacCormac, in his Inaugural Address in the section of surgery, at the annual meeting of the British Medical Association this year, from a letter received from Surgeon-Lieutenant Evans, I. M. S., with regard to the injuries inflicted by the Lee-Netford bullets in Chitral. That officer states that all the

cases of uncomplicated wounds of the soft parts healed rapidly and well, but that his patients accounted for there being no severe bone injuries under treatment by the statement that "all the men who had suffered fracture of the long bones were dead."

From other statements however, it would appear that even the long bones may be drilled through without serious injury to the surrounding parts. With regard to the proportion of killed to wounded, Dr. Fischer considers that this will be doubled, one in three instead of one in six, the average of the wars of the present century. He bases his estimate on the increased liability to hæmorrhage due to the clean cutting action of the modern bullet, and to the increased proportion that may be expected of wounds of the upper half of the body. The latter part of his argument is open to exception, wounds of the lung, as Dr. Fischer himself allows, will probably be less severe than formerly, and the statistics of modern wars show that the liability of the upper part of the body to be hit has not increased, and depends more on the presence or absence of cover for the lower limbs than any other factor. For instance, wounds of the lower extremities gave 332·8 per 1000 of all wounds in the Crimean war, at Sedan 440·4, and at Metz 406·8 per 1000, while in the Ashanti campaign, a jungle war, only 233·7 per 1000 affected the lower extremities.

The argument from increased liability to hæmorrhage is however undoubtedly sound, and by itself this factor alone might suffice to increase the ratio even to the point given by Dr. Fischer. He leaves out the obvious, if somewhat grim deduction, that the greater the proportion of killed and wounded, the less work there will be thrown on the Medical Department and on the Ambulance Transport, and yet this point is one that should be kept in mind, since, in connection with the undoubted tendency of wounds, inflicted by the modern bullets, to be either very severe and probably rapidly fatal, or, on the other hand, comparatively severe or only slight, this consideration must affect to a considerable degree the extent of the arrangements necessary for the removal of the wounded. Dr. Fischer considers that the total number of casualties will be increased, and estimates them at 22 to 30 per cent. of the total forces engaged; this last average has only been attained on two occasions during the present century, by the Russians at the Borodino, and by the troops of the same nation at Plevna, during the first assault on that town. Dr. Fischer bases his statement on an elaborate calculation of the probable number of hits to shots fired, he leaves out of consideration the very important fact that the upper limit of the casualties in an army is defined pretty accurately by the amount of suffering, physical and mental, that its component parts are prepared to endure before giving way, and that it is very doubtful if any large body of men, neither fanatics nor savages, could be found to stand up to a loss so severe as the above. Valentine Baker puts the breaking strain of the best troops at 30 per cent, and it is probable that before so high an average had been attained, a good many of the weaker links of the chain would have given way, when say as many as three army corps were engaged. It must be remembered that a 30 per cent. loss

in say 100,000 men, means almost entire annihilation of some brigades, since it is not probable that the whole force will be equally engaged. That the troops which actually come under severe fire may lose 30 per cent. is not to be denied, but when the question of removal of wounded comes under consideration, we must not leave out of sight the fact that we have the medical units of the reserve troops to fall back upon. On the whole, a general average of 10 per cent, will, I should be inclined to infer, be the highest we need anticipate. Lieutenant V. Kries agrees with Dr. Fischer on this point.

With regard to the position of the collecting station, Dr. Fischer very appositely points out that much must depend on the nature of the ground. In open country, where the field of battle is, as it were, the glacis of the enemy's position, it will have to be placed at least 2000 metres from that position: in broken or undulating ground it may be pushed up very much closer. The former distance must at once prevent any possibility of any regular removal of the wounded during the progress of the action. Some interesting experiments of V. Kries may be referred to here. Working over a distance of 350 metres between the position of the wounded and the collecting station he found that his weakest bearers began to break down after travelling 5600 metres, that is 8 double journeys, half of the way empty. The strongest were able to travel 7700 metres, 11 double journeys, and could have done more. Supposing the collecting station to be 2000 metres from the enemy, the average distance to be traversed will be 1050 metres each way, and the weakest stretcher bearers will begin to give in after $2\frac{1}{2}$ journeys. After 3 double journeys a good number will undoubtedly be *hors de combat*. Taking the average amount that each man can do at 7000 metres, a very high average in all probability, we find each stretcher can do just short of $3\frac{1}{2}$ double journeys; that is it can, at the very outside, bring in 4 patients. For each double journey half an hour roughly will be needed including a halt for dressing the patient. It would probably be necessary to add at least a quarter of an hour for other halts. V. Kries found that the average extreme distance to which a stretcher could be carried without a halt was 1100 metres, but this apparently was not after several trips. It will be a fair calculation to allow three-quarters of an hour for each double journey. Then 4 such will take 3 hours, and at the end of that time the 25 stretchers of a British brigade would bring in 100 men, equivalent to 2.5 per cent. of the entire force: the 32 stretchers of an Austrian brigade would bring in a rather smaller percentage of their stronger unit. The point can be succinctly stated as follows: since each stretcher has four bearers, you can bring in as many wounded men as you have bearers, at the cost of completely exhausting four men. What the casualty list would be among these 100 or 128 stretcher bearers, walking leisurely for three hours behind a target exposed to magazine rifle fire, may be left to conjecture. Dr. Fischer takes as a concrete example a brigade 6000 strong; casualties 30 per cent. or 1800, of these 30 per cent. killed, remaining 1260 wounded, one-third of the wounded so severely injured as to be unable to walk. He

allows 1 hour for each double journey, and calculates that of the 420, requiring carriage, the last 32 (there being 32 stretchers per brigade) would arrive at the collecting station in 13 hours. This is simply putting up nine-pins in order to knock them down. The reality is bad enough. Let us take our English brigade 4000 strong; 10 per cent. casualties gives us 400 killed and wounded, 30 per cent. of these killed leaves us 280 wounded. Say 100 of these need carriage, then we can just manage it by completely exhausting our bearers, taking no account of their casualties while exposed to fire, and taking also no account of the wretched plight of the wounded being carried through a hail of ricochets and bullets passing through and over the fighting line, with every now and then a bearer falling wounded, or a stretcher pole cut in two. It must be further remembered that the bearers are not selected men physically, whether belonging to regiments or to the Medical Staff Corps, and the amount I have calculated for their being able to do is on the basis of selected strong men. There are two alternatives, either largely increase your bearer *personnel*, which both Dr. Fischer and Lieutenant V. Kries recommend, or make up your mind that the removal of the wounded must wait till after the action is over.

Any great increase in the bearer *personnel* is hardly to be hoped for, nor do I think it is advisable. The more bearers you send under fire, the more you will lose; 200 men exposed for $1\frac{1}{2}$ hours, or 100 men exposed for 3 hours, will give much the same total loss, nor do I think it at all fair on the wounded man that he should be exposed to the risks of that *mauvais quart d'heure* on his way to the collecting station; better die in peace where he lies, than be jolted across 500 or 600 yards of ground to fall off the stretcher with a bearer killed on the top of him, or a pole broken below, at the end of it. Even in undulating and broken ground, where a certain amount of cover could be obtained for the stretcher bearers, a concentration of the wounded at a collecting station 2000 metres from the enemy, would probably be found impracticable; for every ascent or descent enormously increases the work of the bearers, and any advantage gained from a lessened roll of casualties would be practically nullified by the more rapid exhaustion of the men. Dr. Fischer recommends that light 2-wheeled carts be used in advance of the collecting station, to supplement the stretcher transport; but the use of any wheeled transport so close to the enemy is most objectionable. A loaded cart cannot travel out of a walk, and is much more vulnerable than a stretcher; 2 bearers out of 4 may be shot, and the stretcher still keep working, but one wheel broken, or one leg of the horse struck, and your cart is useless. In fact it will I think be found that the best method will be to give up all idea of attempting any systematic removal of the wounded until after the conclusion of the action. The wounded must be attended to where they lie, by the medical officers of the regiments of the fighting line, assisted by their regimental medical *personnel*; where good cover is obtainable close at hand, they can of course be removed to it as rapidly as possible, but any systematic concentration towards the rear must be abandoned. The regimental medical officer is in a more favorable position than the stretcher bearers, as he can avail himself to a

considerable extent of cover, and has not to move in an erect posture in slow time. Besides this there is another consideration: as I have shown, if you attempt to concentrate your wounded at 2000 metres from the enemy, each bearer can bring in one wounded man from the fighting line; if in doing so he is struck, he not only fails in his object, but he also diminishes the strength of the bearer company by 2, *viz.*, himself and the man who has to remove him, whereas a medical officer, before he is disabled, may have saved several lives by staunching hæmorrhage, and relieved much suffering by giving sedatives or even water. Naturally the loss among the regimental medical officers will be heavy, but so much stress is laid by all authorities on the necessity of having medical officers in close proximity to the fighting line, and the great moral effect that their presence there exercises, that it seems worth while paying even the high price that will in all probability be demanded for doing so. At the same time it is highly advisable that every man should be very carefully instructed in self-help, especially in the case of hæmorrhage, which will probably be the most fruitful source of mortality in wounds not immediately or rapidly fatal. Once the fighting is over, the wounded can be more systematically attended to. But now there will be no objection to moving collecting and even dressing stations as close up to where the wounded lie, as the local peculiarities of the ground permit. Stretchers need only be used to convey the wounded to these stations from where they lie, a distance that will vary with the number of the roads in the neighbourhood. In most districts in England this need not be more than a quarter or half a mile.

The difficulty that will now arise will be darkness. Lieutenant V. Kries insists very strongly on the necessity for practice in searching for wounded by night and the provision of large lanterns for this purpose. In the Austrian Army, as shown in Major Hausenblas' paper, after an action each corps has a particular area of the battlefield told off to it to search for wounded, preferably of course that portion over which it has itself advanced. Dr. Fischer recommends a considerable increase in wheeled transport. It is doubtful if this is advisable. In the Austrian Army very elaborate regulations are laid down by which commissariat and ration carts can be utilized for sick transport. Using these, they can, as in the case illustrated by Major Hausenblas, provide carriage for 128 wounded from the collecting to the dressing station, in 32 carts for each division. Any increase in the number of carts means a corresponding increase in sanitary *personnel*, as every cart should have an escort. Of course you can send off your carts in batches of 3 or 4, but on a dark night, on narrow roads, one man cannot look after all these carts and keep them together. The solution of the question seems to me to lie in the adoption of the Tortoise Equipment, or some similar form of light movable hospitals. By using some such arrangement a waggon can be sent along any field road to wherever there may be a collection of wounded, a hospital pitched at very short notice, and the wounded housed for the night. Any absolutely necessary operations can be then performed without the patient having been exhausted by a long preliminary journey in a stretcher across country, or jolting in a waggon down

a rough country road. The subsequent fate of the wounded must depend largely on military considerations. If it is necessary on tactical grounds that the battle-field should be cleared of wounded as rapidly as possible, then of course it must be done, and the necessary transport provided. If this is not however, absolutely necessary, the wounded may with great advantage to themselves be left in peace where they are, only such cases being removed as are hopelessly disabled and at the same time able to bear transport. For any such scheme the organization of the British Army is particularly well fitted, being as it is, relatively weak (compared at least with the German Army) in stretchers, but relatively strong in wheeled transport. All that is necessary is that definite regulations should be published, enabling free use to be made of empty commissariat waggons, and requisitioned country carts; it is understood generally that use would be made of these, but understandings are feeble things to depend on when time presses. The question should be settled beyond the possibility of mishap as in the Austrian Army. Dr. Fischer and Lieutenant V. Kries both in my opinion fall into the same grave error. Assuming in the first place that the number of wounded will be largely augmented, an assumption quite void of proof, and recognizing that owing to the distances to which the lines of medical assistance will, in consequence of the increased range of modern projectiles, have to be pushed back, the labour of removal of the wounded will be greatly increased, they at once demand as the only solution of the problem a greatly increased bearer *personnel*, and more ambulance waggons. I do not myself see how an unwieldy transport column is likely to improve matters. In civilized warfare where the climatic conditions do not absolutely prohibit it, the wounded can very well be left with only rough shelter for the first night provided their primary wants of dressing and nourishment are attended to.

Ever after that, the less they are concentrated compatibly with saving the surgical staff from an undue amount of work, the better for them. Removal can proceed leisurely as transport becomes available; much more harm than good is likely to be done by taking the pessimistic view that seems so common on the Continent as regards this matter of ambulance transport in the future. A compact well organized train, regularly practised in peace in the work it will have to do in war, will do much more than a straggling unwieldy mass of carts and stretcher bearers, too large for efficient supervision, and yet not large enough to get all the wounded under shelter and off the field before nightfall. Some of the wounded must lie out, however, strong your bearer *personnel* may be (within the bounds of any reasonable allowance); it will moreover be physically impossible to collect all before dark, and those that lie out will not be necessarily only the slighter cases, they will be the most inaccessible. Much better for the wounded that the medical officers and stretcher-bearers should utilize the few remaining hours of daylight in searching for them, and administering necessary treatment and nourishment, than that they should expend all their time and labour in removing only a portion, even though they may be able to put these into position of more or less comfort. A

pressing need in the Austrian army, as Dr. Fischer points out, and the same applies to our Home army, is the want of highly trained medical subordinates. In the German army the *Lazareth-Jehulfen*, in the French the *Infirmiers*, and in the Russian the *Feldscheerer* supply this want: it is doubtful if any service is so well off in this direction as our Indian army, with its Assistant-Surgeons and Hospital Assistants. It may seem rather brutal to suggest that the wounded should be left unsheltered for the first night, it is indeed a choice of evils, but I think any one who reads the description of the villages on the field of Gravelotte during the night after the action, in Richter's *Kriegstagnbuch*, will feel inclined to deny that it is better to be out in the open in solitude, than crowded into the close stuffy rooms of filthy cottages, with the incessant noise of passing troops and trains, and a possible chance of being burnt alive. When possible, I think we should be guided by the principle of bringing the hospital to the patient, and not the patient to the hospital, and for this purpose the Tortoise Equipment is most advantageous. The most serious difficulties will naturally arise in those cases where the opposing forces are of mixed composition, European and savage, or when the inhabitants of the seat of war are savages. In such cases it will be impossible to leave the wounded scattered, and the ambulance transport and medical officers must be prepared for unremitting labour till their concentration is achieved. The wounded of the defeated side will always remain a great trouble. Between civilized nations it should be possible to arrange for the handing over of certain medical units, preferably those on the protected or unthreatened flank, to the victors in case of retreat. These, however, are minor points, the great cardinal fact which must rule all ambulance and ambulance transport work in the future is, that owing to the increased range of modern weapons, and the consequent increased distance that must separate the collecting station from the fighting line, if any thing like a systematic removal of wounded during the progress of the fighting is attempted, the work of the stretcher bearers will be so increased that it will only be possible to bring in as many wounded as there are stretcher-bearers available, at the cost of completely exhausting the latter, and taking at the same time no account of the probable casualties among them. There are two solutions of the problem, one to greatly increase the number of available stretcher bearers, the other to postpone the systematic removal of the wounded till after the action is over, and in short to bring the Field Hospital to the patient and not the patient to the Field Hospital. Dr. Fischer and Lieutenant V. Kries adopt the former solution. This solution involves the very great drawback of increasing largely the non-combatant *personnel*, and it is very doubtful if military leaders would sanction such an increase. The second alternative is open to the objection of leaving the field of battle encumbered with wounded. On surgical grounds the less concentrated the wounded are the better. The question must be decided by military men: if they wish to have the field of battle cleared during the progress of the action, they must provide the increased transport or rather sanction the increase; if not,

the means at present provided should be sufficient. Lieutenant V. Kries insists on at least a fortnight's training a year of all stretcher-bearers in field work, in addition to their instruction in first aid and nursing duties. During this time they should be exercised with a force of all arms, separate tactical ideas being brought into play on different days. Special practice in night searching is also necessary, and Lieutenant V. Kries suggests that portable electric lanterns, the elements being carried in a knapsack, should be specially provided or this purpose.

Major Hausenblas' paper is most interesting, but too long and too detailed for ready condensation; it goes most carefully into all the minutiae of the medical arrangements of an infantry division of the Austrian army operating independently, during the day preceding, and the day of, an engagement. Almost simultaneously with the publication of this paper new regulations were published for the Austrian medical service which considerably affected the position of its officers. For instance, in detailing the work of a collecting station Major Hausenblas gives as the commandant of the collecting station, to which five medical officers of various ranks were attached, a corporal of the sanitary division; all orders to the sanitary *personnel*, not of a purely professional nature, had to be given through or by this corporal. By the new regulations the Senior Medical Officer of a sanitary unit is its commandant. I have already indicated what seems to me the best feature of the Austrian system *viz.*—the very careful regulations providing for the use of empty commissariat waggons for sick transport. In other points the system does not recommend itself. To take, for instance, all medical officers away from their regiments, in order to form an unwieldy collecting station, seems a mistake. Major Hausenblas recommends the formation of a larger number of small collecting stations, and also that one medical officer for every regiment of three or four battalions, should accompany the fighting line. It is doubtful if this is enough. The French and Germans like ourselves, send a medical officer for every battalion under fire. Of minor matters the detailing of three cavalry orderlies for the use of the divisional P. M. O. is worthy of note. Major Hausenblas touches on the great difficulty of providing for proper attention to the wounded of the cavalry during the preliminary scouting, but makes no very practical suggestions on the subject. This difficulty which must have struck all medical officers who have taken part in cavalry manœuvres is one that needs more careful consideration than it seems to have received so far. Brigade-Surgeon Williams of the New South Wales Military Forces read a paper on the subject before the U. S. Institution of that Colony in 1891, but his recommendations were on too liberal a scale for practical adoption.

SOME CONSIDERATIONS ON THE ATTACK OF INFANTRY AND ON RECENT WRITINGS ON THE SUBJECT.

Ry Br-General M. W. E. GOSSET, C. B., Comdg. the Bangalore District.

Since the last two great wars in Europe, there is no subject which has been more written about than the attack, and the best method of approaching a position under the fire of modern artillery and infantry arms of precision.

England has added largely to the literature on the subject, and the outcome of years of consideration by our best officers is our present Drill Book. One thing is certain, that in it we have made an advance unusual in so conservative an army as ours, but I doubt whether this has been fully recognized, nor among many officers has it been acknowledged as a solution of the problem. It is, however, based on the soundest principles; the instructions are clear; sufficient detail is given; the position and duties of commanders are defined; and much scope is allowed for individual intelligence.

Notwithstanding all this, we are for ever hankering after something more definite,—for a normal form of attack in fact, which will be easy to teach, and be made by some means or other to fit in under every condition that may present itself in war.

The fact is our present regulations fail, not because they are not sufficient, but because we have not been educated up to them,—they are in fact, in our present state of tactical knowledge, *more* than sufficient. Our military education, unlike that of Germany, has never given enough freedom to individuals, and the subaltern officers, and non-commissioned officers, from want of appreciation of the fact that they should be guided by general principles, and should apply them in the battle-field to suit the circumstances of the moment, are still looking over their shoulders for orders from a superior officer in rear, instead of acting on their own judgment. Until junior commanders are accustomed to accept responsibility and think for themselves, our Drill Book, admirable as it is, will not have fair play.

This is not the fault of the junior ranks. In our small wars against savage or semi-civilized tribes, they have always come to the front, and have probably done better than either Germans or French would do under similar circumstances. It is the fault of the system; it is the want of that tactical sense in the higher ranks who have not yet grasped the deep and cogent meaning of what our Drill Book inculcates; and until they have as a body, thought the matter out, and insisted on such a system of regimental instruction as is wanted now-a-days, we shall not, I fear, make any great advance.

We must relegate the Lieutenant-Colonel and the Adjutant, the Sergeant-Major and the pace stick to their proper position, and make our field training the stepping stone to the higher tactics.

I do not mean to condemn our field training altogether. We have improved considerably in this respect, especially in India, but it is still in many corps very defective, and the writer of an able article in the *Pioneer* in January last, struck a true note in saying "that it is too often of the sky rocket class, a fizzle, a fuss, stars of bright possibility, mutual applause and no result." Further on he says, with regard to the want of preparation for the higher tactics "the true reason for failure is a universal one, we are trying to run before we can walk ; it is because the spirit of tactical thought, that unconscious mental effort we call 'sense,' is absent."

Many officers who have considered the matter will, I think, allow that this is true ; there are exceptions of course, and until we have reached a point in military education, which will ensure our field training being a real preparation for war, field manœuvres on an extended scale will only be of use in showing whether general officers can handle a force of any size ; the rest will be like a field day at Aldershot—as described by a soldier years ago, "half right turn, half left turn, and take the beggars' names down."

There are other reasons why our present system of attack has not altogether found favour ; one is that the instructions although clear, require very careful study, and the number of our officers who devote themselves to very careful study of the Drill Book is not large ; and another, that our Musketry Schools have failed to bring the detail of musketry up to the level of the new infantry attack in several important points, thus causing confusion and uncertainty. "We must" says the writer in the *Pioneer* above quoted, "blend parade and range teaching with that steadiness in the field which is sometimes called 'battle-field discipline' ; that alone can stand the stress of magazine fire, or enable troops to be handled in the fight."

The traditions of the Hythe School run in a narrow groove, and many of us have still to learn that musketry and tactics must go hand in hand ; there is no gulf fixed between them, one is the complement of the other.

It is a notable fact that although our present Infantry Drill Book has been in force for two years, its principles have not yet gone home, and as I have already said there is still a clamour for something more tangible, and in some commands systems of attack have been published, which although perhaps only intended to be explanatory, in reality often define duties and methods so authoritatively, as to leave little or no discretion to individual commanders of all grades. In one command such a form of attack was thankfully accepted by certain officers questioned on the subject, because, as they admitted "when once you learn the G. O. C.'s special form, you need not think for yourself, and can't be dropped on."

If this is done, and battalions go on field service each with a different "normal" form of attack, there might be a great deal to unlearn on

the eve of facing the enemy, and this, I am informed, has actually happened quite recently.

It would be no evil, if these systems were always based on the principles of the Drill Book, in which it is distinctly laid down that the form an attack would assume depends on ever varying conditions; but as far as I know, this is not the case, and the independence of junior commanders and the initiative of the advance coming from the firing line is ignored.

From what I gather from the various letters and reports of the German system of attack in the manœuvres last year, no check whatever was placed on the form the attack assumed, provided the main principles which are laid down are adhered to.

The initiative when once the attack is developed comes from the front line, and there is no interference with company commanders and those under them. The development of as many rifles as possible in the firing line, the steady advance to the front regardless of loss, and the final charge, all depend on the independent action of units.

We on the contrary often try to control the attack from the rear, and so lose what is the soul of our infantry attack, as I read it. We imitate, in fact, the German form, and lose the spirit.

But if we fail to assimilate our present system, the question arises can we find a better one, and more suited to the special fighting characteristics of the nation?

It will at any rate be instructive to see what the French and Germans are doing.

The French method, as carried out during the manœuvres of last year, is thus described in an article in the *Pioneer* of November 9th 1894, The writer says that their attack is normally delivered as follows:—

“The shooting line and supports are amalgamated from the first, and the battalion is formed in two lines, two companies in each, each company initially in a line of sections, in columns of fours, at twice deploying interval.

The front is covered by 16 scouts from each company (32 on service); thus the normal frontage of a battalion in attack is equal to its front two deep.

In this formation the battalion approaches the enemy's position; on arrival at about 1200 yards from it, the columns of fours front form in single rank, and the leading line of the battalion then becomes a single rank, elbow to elbow.

In this formation the advance is continued up to 700 or 800 yards when fire is opened. From this point the advance is continued by alternate companies or even larger units, but no doubling is allowed, and every effort is made to keep the men in good wind. Within about 500 yards individual fire is the rule, beyond that range volleys by sections.

The 2nd line did not usually reinforce the 1st line until the latter was preparing for the assault by magazine fire at about 200 yards range.

Once launched, the troops moved on straight for the enemy's position, never wavering, and seldom pausing, until the decisive fire position was reached.

The writer goes on to say, that this is the attack in line in its highest development, identical in principle with the Frederician method: the idea of the blow contrasted in the sharpest manner with the method of attrition of masses, which was the keynote of the Napoleonic system; further on he says, "the French have got back to the old ideal light infantry skirmisher, a man of proved courage and skill, whose business is to see without being seen, and to kill without being hurt. Behind these true skirmishers the line now marches to the attack as it formerly marched, its object being now as then to develop the maximum intensity of controlled fire regardless of the losses it suffers, always provided the losses do not prevent the attainment of the desired end, *viz.*—the maximum intensity of controlled fire.

Now this system, as the outcome of all the study caused by the experiences of the wars of 1870-71 and 1877-78, is very remarkable.

That the French, of all the nations in Europe, should solve the difficulty we all labour under by reverting to the steady linear tactics with which we beat them in the Peninsular, is enough to set every English soldier thinking. At any rate it is evident they do not believe in the system of ordered disorder; or is it that they do not think that the peculiar temperament of the nation will allow of its being carried out in war? We have only to picture to ourselves their attack in old days as described by Marshal Bugeaud, and compare it with their present system, to realise the change. *Elan*, which means so much, seems to have been put aside as a thing to be forgotten.

Turning to the Germans, we find in the manœuvres of 1894, that they work on a diametrically opposite principle. They do not believe in a normal form of attack, and still adhere to the idea that they must accept disorder and evolve order from it.

They display as small a fraction of their force as possible at first, in order to keep the larger and closer bodies under control.

When they come under fire, they take ground at some 900 to 600 yards from the enemy's position, reinforce on a flank or thicken the line; advance by units (the initiative always coming from commanders of units) and seize prominent positions maintaining throughout absolute independence of the front line, and at 500 yards or so, move on with their line further strengthened to 300 yards. After this, all formation appears to be lost, but notwithstanding this, perfect regularity is maintained, and such is the training of the men, that they fall naturally under the command of the officer or non-commissioned officer who happens to be immediately behind them.

This system differs but little from that which developed during the war of 1870-71. It shows the faith they have in the high instruction given to officers and non-commissioned officers, and the stern discipline, combined with the development of intelligence, they insist on in training their men.

There are, however, writers in Germany who advocate a return to linear tactics such as the French have adopted, and a few years ago it seemed probable that their ideas would prevail, but the last annual manœuvres have proved the contrary.

I would here draw attention to a paper read last year, by Captain Maude, late R. E., at the Royal Engineer Institute, entitled "Twenty years of tactical evolution in Germany," which has not, I think, received the notice it deserves.

He begins by comparing our system of instruction with that of Germany, and here, I think, does us an injustice in stating, "that whereas in Germany we see steadiness on parade and faith in the offensive, raised to the first place in the soldiers' training, in England the advantage of the defensive and the uselessness of smartness under arms are accepted almost unanimously as the cardinal points in our military training. Whilst in Germany everything centres in the destruction of the enemy first and the rest afterwards, in England the avoidance of loss by the employment of suitable formations is elevated to the dignity of a dogma."

There may be a few officers in our army who hold the ideas here attributed to us, but I do not know them, and the majority are as fully alive to the necessity of steadiness and parade discipline as ever they were. As to the question of avoidance of loss, I see little in the German system that shews that they are less anxious than we are to adopt such formations as will save their men, but Captain Maude may be right in maintaining that we do not in our regulations put forward sufficiently strongly the principle that the offensive in battle occupies a foremost place; and we may, as he avers, ride to death the idea of the destructive power of modern weapons.

One thing I feel sure is certain, and that is that the defensive has gained enormously in power, and the extent of this gain has to be proved in the next war. Englishmen have never been backwards in assuming the offensive, and if we have to act on the defensive, it will be because of numerical inferiority, and even then we shall be a hard nut to crack.

The virtue of Captain Maude's paper lies in the stress he places on discipline as a more important factor than ever in the attainment of success in war. He advocates a return to "the old war-trained disciplined line, discipline being measured by the capacity of enduring heavy loss. Discipline has been the mainstay of our army, and combined with the virtues of not knowing when we are beaten, has won us many a battle.

The following is worth quoting. He says,—“The Germans recognize that the complete concentration of mind and body required in drill, as they still understand and we used to do, cannot be kept up indefinitely, but relaxation of effort is indispensable, and this they give their men by teaching them pure light infantry work, and allowing them every reasonable indulgence on the march; but the moment they come under close order conditions again, whether on fatigue duties, or whatever they may be, the most rigid and instantaneous execution of the command is exacted; and on service, when coming under fire in close order, they look on this habit of concentrated effort of obedience as the chief guarantee of victory.” Further on he adds. “Therefore, they say, develop the intelligence of the man to the utmost by educa-

tion, train him by drill as an individual to concentrate that intelligence, finally stimulate the intelligence to the utmost, and by rigid close order drills, teach all to work together."

"These are weighty words and worth thinking over.

It is to be remembered that this has to be done in the German army in two years. We have seven years in which to teach it, if it is worth teaching, as no doubt it is.

Captain Maude concludes his paper by saying "that the only way by which (with the present armament) tactical advantage can be secured, is by the aid of improved methods of inculcating discipline, to render possible the application of relatively less dense formations in point of depth; in other words to revert to the principles of Frederick the Great's line tactics again." That "the essential condition of victory is, and will always remain, the attainment of fire superiority at the decisive point," and finally "discipline is, therefore, the point at which we have to aim in the preparation of our troops, and those formations will be the best which facilitate the maintenance of this discipline in the highest degree, without, however, exposing too vulnerable a target to the enemy."

Of all known formations, line, either two deep or single rank, meets those conditions most nearly, and therefore the maintenance of discipline, and the employment of line tactics, affords us the best guarantee of victory in the future."

When we consider the hideous confusion and disintegration of units that occur in a modern battle, and which constitutes a great danger even in so highly trained an army as Germany possesses, we are tempted to say that the natural formation for British troops is the deployed line with highly trained skirmishers in front, being as Captain Maude describes it "that formation which permits of the development of the greatest intensity of fire under efficient control."

The argument against any return to the old line, is, I take it, that it does not adapt itself to the ground in the way the German system, as shewn in the last manœuvres, certainly does. The Battle of the Alma, may be mentioned as an example of this. There the British army deployed deliberately into line and advanced over all obstacles until the mingling of units was even worse than it was found to be in the Franco-German war. The British soldier himself solved the difficulty as he had often done before, and here the discipline and the fighting power of the race came into play.

But no special form of attack is suited to all conditions of ground, and this both ourselves and the Germans have already recognized, nor is it to be supposed that any enemy now-a-days will await an attack, as the Russians did, in unwieldy columns.

For small bodies and an attack in the open, if it can be made, there is much to be said in favour of the line.

The Germans say that an attack in the open is hopeless, and during the late manœuvres they seldom, if ever, pushed it home, but after advancing to a point where they could effectively use their rifles, remained there, and used that portion of their line as a retaining force,

while they attacked over ground which allowed of an advance more under cover.

But there is this to be said, that given the choice of ground for a defensive position, it would be chosen if possible so as to oblige an enemy to attack over exposed ground, and he would have to make the best of a bad bargain.

It will be observed that the Germans recognize this in adapting their form of attack to all conditions, and if we ever return to linear tactics or a modification of them, there seems to be no reason why we should repeat the mistake made at the Alma, but deploy when the necessity shows itself, and move over ground where there is cover from view or fire, in such a formation as would allow of a prolongation of the line when necessary.

It is also well to consider how far our present system of attack is suited to our Native Army. If our education in British regiments has not come up to the requirements of modern war, it appears that the same may be said to apply to the Native Army. Accustomed, as many of them are, to look to their British officers as their leaders, can we educate them up to the high standard of independence in the attack that our Drill Book demands?

If not, the disciplined line appears to be better suited to them than any other system. Their chances of having to fight a European enemy are remote; and it would therefore be better to train them to a form of attack, which is simple in itself, which will ensure the maintenance of discipline, and will meet the requirements of the small wars we are constantly engaged in.

The proposal may be considered retrograde, but I confess that I am much in favour of the old disciplined line, so modified as to suit modern conditions. Our aim must be—

- (1) To advance towards the enemy's position with steadiness and in such a formation as will form the least effective target for the enemy.
- (2) To maintain the strictest discipline possible throughout.
- (3) To develop the power of the rifle to the utmost by employing as many rifles as the space available will contain.

It seems to me that these conditions will be met far better by the line formation than by our present system of depth and almost unavoidable mixing of units early in the fight, to say nothing of a danger which the Germans have foreseen, *viz.*, that supports and reserves, as we place them in our present system, would probably suffer so much from the fire of the enemy that they would either open fire in rear of the first line, or run forward and join it in order to open fire and relieve the tension they are under in suffering loss without being able to use their rifles.

The Germans, with their high standard of tactical education and good discipline, hope to avoid all this, but I do not think the education of our regular army has reached such a point, and until it does, we must look to a simple form of attack, as more suited to the heterogeneous constitution of our forces.

It seems to be forgotten that on the outbreak of a European war in which we might be called upon to take part, regiments would have to be filled up by half trained reservists, volunteers from the militia, and others to whom it would be impossible from want of time to give the training our system of attack requires, and that after our first battle, the ranks would have to be completed by recruits probably also only half trained.

The armies of foreign nations with universal service are more homogeneous and do not labour under the difficulties that we do in this respect, or at any rate in a lesser degree.

If they, with all their efforts strained to the utmost, find the path to victory strewn with difficulties, how much more must we with our army constituted as it is, scattered all over the world.

RECRUITS AND RECRUITING.

By Lieutenant D. M BOWER, 2nd (Q. O.) Bengal Light Infantry.

“Extreme care in the selection of its material was no doubt one of the causes of the early invincibility of the Roman Legions.”—Sir William Aitken.

In selecting recruits for the Native Army, two requirements must always be borne in mind, *viz.*—that we obtain our material from hardy and warlike races, and that the men chosen are of powerful physique, irrespective of the question of height. A disregard of the first qualification has led to the occasional enlistment of a number of worthless soldiers; and as regards the second, it would appear that the fact that “it is much more important that a soldier should be strong than that he should be tall,” has in many instances been entirely overlooked.

An American authority, Doctor Baxter, is of opinion that “a man from 60 to 64 inches in stature, and well proportioned as to build and weight, is *ceteris paribus* as serviceable a soldier as can well be required.” This view coincides with that of Sir William Aitken who considers that “the greatest activity is looked for in the infantry of the line, and this seems to be generally associated with short cobby little fellows, who have a set and square appearance beyond their apparent age.”

When on recruiting duty, I was often obliged to reject good men because they were under the standard height, and compelled to take others in their place, who were tall, weedy, and undeveloped.

In fixing a standard of height, we must remember that “mean stature varies under the influence of race, and that the application of one uniform standard is certain to result in the rejection of powerful and promising recruits.”

“Another important point, which should always be borne in mind, is that one of the best indications of powers of endurance and fitness for great exertion is to be looked for in the flexibility of the chest, or extent to which its lower walls can be expanded. For this reason two breast measurements should always be taken; the first after a full inflation to show the maximum power of expansion, and the second after complete expiration, to show the minimum measurement of the chest when empty. The result in both cases should be expressed thus— $\frac{37}{33}$ inches.*”

Hutchinson fixes the healthy mean expansion of the chest at three inches. When the flexibility of a recruit's chest is very limited, he should almost invariably be rejected.

In examining recruits, care must be taken to ascertain that their weights are in proportion to their stature. If two men are taken, each weighing nine stone, but one 5' 7" and the other 5' 4", the latter, in nine cases out of ten, will prove a better soldier than the former. Owing, however, to the being a fixed standard of height for sepoys, the first would be accepted and the second rejected, thus overlooking the fact that “there is no actual relation between mere stature and aptitude for military service.†”

* Sir W. Aitken

† Boudin.

In everything relating to military service, due allowance must be made for the peculiarities of different races. Recruits for the Native Army may with advantage be enlisted much younger than their comrades of the British Service, as owing to climatic conditions, the former reach maturity at an earlier age than the latter. Nothing is more noticeable than the manner in which a *young* recruit develops under proper training, while with another of maturer age, improvement is scarcely perceptible. According to a recently published report on recruiting "it has been proved that in some instances where complaints had been made as to physique, the increase gained by a few months training was found to be very remarkable. In one regiment, in the case of 16 men who had been specially enlisted, the average chest measurement increased in the course of a few months from 33½" to 35½", and the average weight from 125 to 140 lbs."

With regard to the relative value of young and old soldiers, I think we are often inclined to under estimate the value of the former, and over estimate the worth of the latter. The serious objections to sending immature lads on service are so well known, that it would be useless to discuss them here. The fact remains, however, that many military writers of distinction have stated it as their deliberate opinion that the young soldier is better fitted for the vicissitudes of a campaign than those who have spent several years in the ranks. The opinions of Von der Goltz, an eminent German authority, though perhaps more applicable to the German than to the British or native soldier, are nevertheless well worth quoting. "All this," he says (referring to the terrors and anxieties of war) "the young soldier endures, in spite of assertions to the contrary, more calmly and better than his older comrade, even when deficient of the bodily strength of the latter. It is only the young who depart from life without a pang. They are not as yet fettered to this earth by the thousand threads that civil occupations wind round us. They have not as yet learnt to be parsimonious with the use of life. The enigma they are anxious to solve lies untouched before them. They mount the hill and do not perceive how sheer is the precipice beyond. Their yearning after experience rouses their ardour for war. Rest and enjoyment, and the aims and aspirations of riper years, are as yet far removed. They advance into action with joy and light heartedness, and both these qualities are necessary for the stern realities of battle."

It has been stated by writers of unquestionable authority that from the eighteenth to the twenty-fourth year, is the period most suited to military service. The body is then sufficiently vigorous to endure hardships, and the soldier is as yet both free and unfettered. The tendency to be headstrong, an attribute peculiar to the freshness of youth, is an excellent salt to martial achievements. Referring to this subject, Lord Wolseley writes as follows.--"Give me young men; they do what they are bid and they go where they are told: they become more amenable to discipline, and though when you catch them first they may have some difficulty in carrying their valises, once they get beyond that they are in a fit condition to take the field."

GOLD MEDAL PRIZE ESSAY

FOR 1895.

*"Militia est potior. Quid enim? Concurritur : horæ.
Memento cita mors venit, aut victoria laeta."*

By Lieutenant.-Colonel J. P. C. NEVILLE, 14th Bengal Lancers.

Referees.

Major-General G. E. L. S. SANFORD, C. B., C. S. I.

Major-General G. DE C. MORTON, C. B.

Colonel R. C. HART, V. C.

Subject:

SIX TACTICAL PROBLEMS, WITH SOLUTIONS APPLICABLE TO INDIA,

Two dealing with a force of,—

Three Battalions of Infantry.
One Regiment of Cavalry.
One Battery of Field Artillery.

Two dealing with Mountain Warfare. One of these with a force consisting of,—

Three Battalions of Infantry.
One Squadron of Cavalry.
One Mountain Battery.

And the other with a force of,—

Seven Battalions of Infantry.
One Regiment of Cavalry.
Four Mountain Batteries.
Two Companies of Sappers.

The remaining two problems to deal with a division consisting of,—

Three Brigades of Infantry of four Battalions each.
A Cavalry Brigade, (three Regiments and one Battery of Horse Artillery).
A Regiment of Cavalry.
A Battalion of Pioneers.
A Battalion of Infantry.
Two Field Batteries.
Three Mountain Batteries.
Three Companies of Sappers.

The problems in all cases to be clearly illustrated by maps and to deal with a *civilized* enemy; the ground to be real or imaginary but such as might reasonably be met by Indian Troops.

GENERAL DESCRIPTION OF THE THEATRE OF WAR.

Map No. 6 gives a general view of the theatre of operations embodied in the six problems which follow :—

The scale is 8 miles to an inch.

Wellington is a fortified place and head-quarters of an Army Corps.

There is a single-line railway from this to Agripore, one of a line of frontier posts, and also a good metalled road.

The Sirhuddea is a deep and rapid river, unfordable, and difficult to cross in boats.

On the first note of war, the civil authorities have removed all boats to a point below Deraghat, so that the only available crossings are the railway bridge and two bridges of boats at Fort Pollock.

With the exception of the approaches to Mount Haytor (Map 3) from the south, the Adampore range must be considered as impossible for troops.

The Kiwarna valley is very broken by nullahs and is difficult for manœuvre and unsuited for cavalry action, as is also the main road between Fort Pollock and Adampore. Between the latter place (a military cantonment, but for the purpose of these problems denuded of troops) and Agripore, the country is open and good for cavalry.

The Kiwarna valley road is fairly good and practicable for all arms, but is difficult in places for wheeled guns.

The road between Adampore and Gulmarg is good, metalled throughout and fit for all arms.

SIX TACTICAL PROBLEMS.

General Idea.

To illustrate six tactical problems connected with the defence of Fort Pollock and the line of the river Sirhuddea.

Owing to complications in Europe, an Indian Army Corps is taken out of the country, so that when an invasion takes place the Commander-in-Chief is unable to take the field beyond the frontier, and is compelled by circumstances to adopt a defensive rôle.

An Army Corps is being mobilized at Wellingore, (Map No. 6).

The orders for mobilization are issued by telegraph on the 1st of January 19—

On the morning of the 3rd January news is received by General Sir A. B., commanding at Wellingore, that the enemy have issued in force from the Surkhab Pass and seized Agaripore, the garrison of that place having been reduced by a false alarm in the direction of Takoh which had drawn off half their effective strength. Those who remained have been made prisoners.

Sir A. B. immediately orders an Advanced Guard† to Fort Pollock to guard the crossings of the Sirhuddea.

† 3 Battalions Infantry.

1 Battery Field Artillery.

1 Regiment Cavalry.

The infantry are sent by rail the same day, the first trains starting at 2 P. M., and arriving at Fort Pollock at

7 P. M. These convey the 1st Regiment.

The remaining two regiments start at 3, and 4-30 P. M., respectively, so that by 10 P. M., the infantry brigade is in possession of the crossings.

These are the N. bridge of boats,
the S. bridge of boats, and
the railway bridge.

The cavalry and artillery march by road at 11 A. M., on the 3rd January, and, only resting for a few hours at Dalbat, arrive by a forced march at Fort Pollock by 4 A. M. on the 4th January.

At day-break this day an Engineer officer, and a few cavalry Sowars who have escaped from Agaripore, arrive at Fort Pollock with news that the enemy is advancing.

This party has been able to demolish the railway line at several points, so that for certainly 48 hours the rail cannot be utilized by the enemy between Agaripore and Fort Pollock.

The Fort is weakly held by two companies of infantry and some garrison artillerymen.

Orders have been received from Army Head-quarters that on no account is the railway bridge at Pollockpore to be injured.

At day-break on the 4th January, although the horses are much fatigued, the cavalry push on to reconnoitre up the Agaripore road.

At 10 A. M., news comes in from Koharna that the enemy's cavalry is in sight. At noon another message is received from the O. C. cavalry to say he is falling back before a superior force of about 12 squadrons of the enemy, whose horse artillery has not yet come up.

At the same hour a telegram is received from Sir A. B.

"Mobilization complete. Am advancing. First train leaves 1 p.m., Arrangements for troop trains every two hours. Enemy reported in force at Adamapore. Move on, and by every endeavour screen the Fort and railway bridge from enemy's observation until dark. I arrive 6 p.m."

PROBLEM I.

Special Idea.

At noon on the 4th January, the advanced guard of Colonel C. is disposed as follows :—

Cavalry.—Advanced squadron in the neighbourhood of Kahorna.

1 squadron on the Phadoo nullah.

2 squadrons at Daudshah.

Artillery.—6 guns on the encamping ground at Badkooa.

Infantry.—1st Regiment in the Fort.

2nd " Badkooa.

3rd " 4 companies, railway bridge.

2 " N. bridge of boats.

2 " S. " "

(A). Point out first of all any error you may perceive in this disposition of the troops.

(B). Assume the rôle of Colonel C., commanding the Advanced Guard and issue the necessary orders at noon on the 4th of January.

(C). On arrival at the Soorma spur at 1-30 p.m. you find that Lieut. Colonel D., commanding your cavalry, has massed his regiment behind the hill and, with 3 squadrons dismounted, is disputing the passage of the road.

The enemy, with 6 squadrons dismounted, is replying from the hill 800 yards to the north, their remaining 6 squadrons being behind Kutti Bala.

Two batteries of horse artillery can be seen trotting down the road near Daudpoora. Make your dispositions (on Map No. 2,) for screening the Fort and railway bridge from observation from the enemy's cavalry, and mention any other arrangements that you may consider necessary in view of the general situation of affairs.

N. B.—For the purpose of these problems, the following points may be noted :—

1 Battalion infantry = 8 companies.

1 Company infantry = 100 men.

1 Regiment cavalry = 4 squadrons.

1 Squadron = 125 men in the ranks.

1 Battery = 6 guns with full working numbers.

In Map No. 2, an emplacement for guns is shown on the highest point of the Soorma spur (marked A) There is room for 4 field guns. The road up to this is not practicable for teams above the commencement of the zig-zag, as there is not room for horses to turn.

The railway line is bordered by wire fences and is therefore an obstacle to cavalry.

SOLUTION OF PROBLEM I.

As in all cases of Tactical Problems, there will probably be several solutions, more than one of which may be deemed correct, the answers here given will deal only with *general principles*, and will not go into minor details. In the event, however, of two examinees both correctly dealing with general principles, the one giving most details would deserve the higher marks.

(With this Problem maps Nos. 1 & 2, should be given the examinee, on the latter of which he should be required to show the disposition of his troops.)

(A). The disposition of the troops is faulty inasmuch as Colonel C. has taken no precautions to guard against surprise from the direction of the Kiwarna valley. In this direction there is a fairly good road across the hills from Adampore *via* Gulmarg practicable for infantry and mountain artillery. He should therefore have thrown out a screen of vedettes towards Kahinay early in the morning.

(B). Order the cavalry to fall back and make a stand at the Soorma Spur until the infantry brigade arrives.

2.—Order the concentration at Badkooora of the artillery, and the infantry brigade, less 2 companies left to guard the bridges.

1 Co. 3rd Regiment* to hold railway bridge.

$\frac{1}{2}$ Co. ditto ditto N. bridge of boats.

$\frac{1}{2}$ Co. ditto ditto S. bridge of boats.

3.—Order the railway bridge to be barricaded.

4.—Order preparations to be made for speedily severing shore connection with W. (right) bank of both bridges of boats, so as, if necessary, to float them across to the left bank of the river.

5.—Inform commanding officers of all that is known of the movements and position of the enemy.

6.—Order artillery to move at a trot to the Soorma Spur to guard the passage.

7.—Send 2 companies infantry (3rd Regiment*) to Kiwarna.

8.—Order the advance of the infantry brigade towards Kutti Bala.

(C). Place 2 guns in position in battery A.

(These must be dragged up by hand from the zig-zag, (about 650 yards.)

The remaining 4 guns on the lower slopes of the spur between the road and the railway, commanding the approaches from the north.

2.—Dispose the infantry on the spur so as to sweep with fire the road and approaches.

3.—Send posts of observation (with signallers) to the heights N. of battery A. to guard against any turning movement in that direction.

* This is an instance of what is meant by minor detail. There is no reason why the 1st or 2nd Regiment should not furnish these detachments. It is as well however to detail the detachments from the same regiment so as to avoid breaking up units as far as possible.

- 4.—Send one squadron at a trot to Kiwarna to throw out a screen of observation in that direction.

REMARKS.

(A). The neglect to guard the approaches from the direction of Kiwarna is indefensible.

(B) 7.—In the absence of any information from the direction of Kiwarna, it is only prudent to send some troops to the mouth of the defile.

The enemy's cavalry is known to be at Kutti Bala and as the approach by the main Agaripore-Wellingore road is the easiest for an army, it is reasonable to expect the hostile infantry by this road. Colonel C. therefore only sends to Kiwarna sufficient men to hold the narrow mouth of the defile until, if it be required, help can arrive.

On reaching his cavalry, he sends a squadron to reconnoitre in the Kiwarna valley. He thus has made arrangements for early information of any hostile movements S. of Fort Pollock while at the same time keeping the bulk of his force concentrated where it seems most required.

(C.) 1.—Only 2 guns are placed in battery A., although it is a commanding and well protected position, as it takes some time to drag guns up and bring them down again. The railway line being an obstacle to cavalry, they are safe there from risk of capture while retiring unless a hostile infantry force arrives on the scene.

The 4 guns on the spur are well placed for rapid retirement or movement to Kiwarna, should necessity for such movement arise.

The general principles observed here are :—

- 1.—To guard as strongly as possible the main approach by the Agaripore road.
- 2.—To keep a sharp look-out from the heights N. of battery A., against any turning movement.
- 3.—To watch the southern approaches to Fort Pollock so as to ensure early information of any hostile movement in this direction.

PROBLEM II.

Special Idea.

Up to 4 P. M. you have succeeded in holding the enemy's cavalry and horse artillery in check at the Soorma spur.

At this hour a message is received from the O. C. squadron at Kiwarna, timed 3-30 P. M.

"A heavy column of infantry with mountain guns is issuing from Kahinay, 8 miles W. of Kiwarna."

PROBLEM.

Make your dispositions with regard to the General Idea and Sir A. B.'s telegram.

N. B.—At this season it is dark at 6-30 P. M.

SOLUTION OF PROBLEM II.

(Maps Nos. 2 and 3.)

- 1.—Send 2 guns (of the 4 posted between the road and railway on the Soorma spur) and your reserve battalion to Kiwarna. They should be in position at the mouth of the defile by 6 p. m., and the head of the enemy's column cannot arrive before that hour.
- 2.—As soon as it is dusk, withdraw the guns from battery A., and post them in the position from which the above 2 guns have been withdrawn.
- 3.—Post 2 companies for the night on the heights N. of battery A, to oppose any turning movement.
- 4.—After dusk withdraw the 4 companies 3rd Regiment* to Badkoora so that they may form a reserve to support either your northern or southern force as circumstances may require.
- 5.—The troops to bivouac for the night in the positions indicated, *viz* :—
 - 1 Battalion infantry.
 - 3 Squadrons cavalry.
 - 4 Guns.

at the Soorma spur, with strong outposts thrown out as far as the nullah between this and the Kutti Bala hill.

 - 4 Companies at Badkoora (3rd Regiment).
 - 1 Battalion infantry.
 - 2 Companies (3rd Regiment).
 - 2 Guns.
 - 1 Squadron cavalry, with strong outpost at the Kiwarna end of the defile.
 - 2 Cos. (3rd Regiment) holding the bridges.
- 6.—At 6 p. m. Colonel C. should repair to the Pollockpore railway station to meet Sir A. B. taking with him a sufficient number of mounted orderlies.

REMARKS.

- (1.)—It is better to send these 2 guns to Kiwarna than those posted in battery A., because they can be withdrawn with less chance of attracting the enemy's attention.
In the same way the reserve battalion, which is the farthest back, is the proper one to withdraw.
- (2.)—After dark, the guns in battery A, are of little use and should be withdrawn to strengthen the protection of the main approach.
- (3.)—It is very essential that the heights should be carefully watched for fear lest during the night the enemy's dismounted cavalry should occupy them.
- (4.)—This movement takes place after dusk so as to avoid attracting notice. Should the enemy perceive any retrograde

* 2 Companies holding the bridges ; 2 companies at Kiwarna.

movement they will at once understand that their infantry division has been sighted towards Kiwarna and will therefore be emboldened to make a resolute assault on the Soorma spur.

- (5.)—The troops must of necessity bivouac where they are for the night and arrangements must be made for supplying them with food, and also with an ample supply of ammunition.
- (6.)—Sir A. B. being expected with the first reinforcements at 6 P. M., Colonel C. must be at the station to meet him and inform him exactly of the situation.

GENERAL PRINCIPLES.

- (a.) Guard the main approaches to the Fort and bridges, which in this case is easy, even for the small force at Colonel C's disposal.
- (b.) As reinforcements are expected at 6 o'clock, and through the night, two guns are sufficient for the detachment at the mouth of the Kiwarna defile, and the 4 are rightly left at the Soorma spur. The enemy approaching from the Kiwarna valley would be very unlikely to attempt to force the defile after dark against an enemy of unknown strength.
- (c.) The reserve of 4 companies is posted at Badkoora. It may be wanted in either direction but as the 2 companies defending the bridges would be available in case of necessity and the Kiwarna defile is by far the easier post to defend at night, it is better to post them nearer the Soorma spur than half way between the two forces.
- (d.) Keep a sharp look-out.

PROBLEM III.

Special Idea.

A troop train arrives at 6-30 P.M., with two companies 4th Regiment and one mountain battery, but not Sir A. B., from whom a despatch is handed to Colonel C. by the O. C. Infantry.

The despatch reads as follows :—

“I am sending you three regiments of cavalry and a horse artillery battery under command of Colonel F. who is making a forced march and should be with you before day break : also by train two companies infantry and a mountain battery.

A large gathering of the enemy is reported in the neighbourhood of Kallu. They will probably try to cross the river there. General E. is watching them, but I may have to go to his assistance, and therefore cannot advance. The force in your front is probably making a feint. I have given instructions to Colonel F. to take with him your cavalry and field battery and drive the enemy's cavalry back beyond Adamipore, which place must be re-taken as our retreat may have a demoralizing effect on the inhabitants. He will reconnoitre towards Agaripore and

endeavour to ascertain the exact numbers, &c., of the enemy. In the mean time, with the force at your disposal, hold the bridges, and if possible keep the enemy from occupying with his artillery any points commanding the fort. You may retain one squadron of Lieut.-Colonel D.'s regiment.

At 4 A.M., on the 5th January, the cavalry brigade (Colonel F. commanding) and a battery of horse artillery arrive at Fort Pollock.

At day-break the force at Colonel C.'s disposal consists of,—

- 3 Battalions Infantry,
- 1 Squadron Cavalry,
- 1 Mountain Battery,

and is disposed as follows:—

- 1st Regiment Infantry, Soorma spur.
- 2nd Regiment Infantry, Kiwarna road, at the entrance to the defile.
- 3rd Regiment Infantry, 6 companies ditto.
- 2 companies holding the bridges.
- Cavalry Squadron, near Kiwarna.
- Mountain Battery, at the mouth of the Kiwarna defile.

PROBLEM.

(A) Still in the rôle of Colonel C, issue your orders at day-break on the morning of the 5th January.

(B) On arrival at Kiwarna, 7-30 A. M., you learn from O. C. Squadron that the enemy's force in front of you consists of,

- 7 Battalions,
- 1 Regiment Cavalry,
- 4 Mountain Batteries,
- 2 Companies Sappers.

disposed as shown on map No. 3. Show on the map the position you would take up and the disposition of the force under your command so as best to carry out the orders of General Sir A. B.

Your reasons for the disposition shewn should be stated.

(C) At noon the situation is as follows:—

You have been driven back to the ridge marked (B) on map No. 3, with heavy loss. Your casualties amount to a loss of three companies.

You have only two guns serviceable, four having been abandoned owing to the destructive fire of the enemy's artillery which has killed the mules.

Your squadron, having expended their ammunition, has retired on Fort Pollock.

The enemy have occupied the Haytor Mountain and their guns have opened fire on the Fort.

A brigade of their infantry (two regiments) has occupied hill (2500).

You have just received a telegram from Colonel F. to say he has occupied Adampore, the enemy's cavalry having retired on Agaripore.

What would you do under these circumstances?

Give full particulars.

SOLUTION OF PROBLEM III.

(A). Order in the two guns F. B. from the Kiwarna Pass to rejoin their Battery at Soorma.

- 2.—Relieve the two companies 3rd Regiment holding the bridges, by the two companies which have arrived by train (4th Regiment) and send them to rejoin their regiment at the entrance to the Kiwarna Pass.
- 3.—Send orders to Lieut.-Colonel D. and O. C. field battery at the Soorma spur to place themselves under the orders of Colonel F. commanding the cavalry brigade.
- 4.—Send orders to the battalion (1st Regiment) at the Soorma spur, to march on Kiwarna.
- 5.—Order all guns and embrasures in the fort to be masked with matting, &c., so as to keep them concealed. Direct the O. C. Fort Pollock to keep his garrison under cover and not to return any fire which may be directed on the fort.
- 6.—Inform all C. O. concerned that you are proceeding to Kiwarna to take command there.

(B). The main object being to prevent the enemy from utilizing good road along the right bank of the river, the bulk of the force should be disposed so as to block this.

In order, however, to observe any turning movement of the enemy, a portion of the troops should occupy the eastern slope of ridge No. 2500 with a signalling post on the highest point.

Half a battalion should be sufficient for this purpose at first.

The other half of this battalion should be placed as a reserve in the ravine at the mouth of the defile, the remaining two battalions and the mountain battery forming the first line to the south of the Pass. The squadron may be drawn up behind these hills.

The foregoing must only be regarded as a preliminary disposition.

Should the enemy, instead of making a direct attack on the defile, attempt a turning movement by the Kuchai or Balapind nullahs, so as to gain the commanding heights of Haytor, then the bulk of the force should be placed on hill (2500).

Should the enemy succeed in turning the defile in the manner indicated above, Colonel C. should fall back on ridge (B). (Map No. 3) and make his preparations for a retreat across the river.

(C). The enemy having practically turned Colonel C.'s position, there is now no hope of his being able to carry out his instructions, and he therefore must retire on Fort Pollock and guard the river crossings from the left bank.

- 1.—Send word to O. C. company at railway bridge to remove so much of the barricade as will enable the troops to cross.
- 2.—Detail two companies with ample supply of ammunition to occupy the north-west end of ridge (B). These, with the two guns to keep up as heavy a fire as possible while the rest of the force is withdrawn.
- 3.—Direct the 1st and 2nd battalions (in order of march) to cross by the south bridge of boats, and the rear battalion and guns by the railway bridge.

- 4.—Detail two companies as a rear guard to keep the enemy in check on the road along the right bank of the river.
- 5.—Give orders that as soon as the troops have crossed, the S. bridge of boats to be cast loose at the western end and floated across the river.
- 6.—The N. bridge of boats to remain intact.
- 7.—As soon as the head of the column has reached the railway bridge, retire the two companies and guns from the top of ridge (B) and order the rear guard to fall back on the bridge.
- 8.—When the whole force has crossed the river place one battalion and the two mountain guns to guard the railway bridge.

The remaining two battalions place in the fort. The cavalry squadron on the plain east of the fort. The two companies guarding the bridges (4th Regiment) post at the N. bridge of boats which should be barricaded.

- 9.—Place charges of dynamite, or powder, in a couple of boats about quarter way from the near end so as to be able at any moment, if necessary, to destroy the bridge.
- 10.—Wire the general situation to Sir A. B. at Wellingore and Colonel F. at Adamapore.

REMARKS.

With this Problem should be given a copy of map No. 3 showing the position of the enemy at 7-30 A.M., on the 5th January.

(A). 5.—As Fort Pollock is dominated by the heights on the opposite bank, and liable to be shelled without being able to return an effective fire, the enemy should be led to believe that it is not armed.

(B). Should a turning movement by the Kuchai nullah be reported from your signalling post, of course it will be necessary to move up on to hill (2500), with the greater part—say, two battalions and four guns—of your force to take the enemy in flank during this march. They will, from this position, also have command of the approaches to the defile.

(C). 1.—As it is important to cross over the river as quickly as possible, the railway bridge, which is nearly a mile nearer than the south bridge of boats, must be utilized.

- 3.—This is to prevent any block that might occur from all the troops passing the barricade at the railway bridge.
- 6.—It is very important that the N. bridge of boats should be kept standing in view of circumstances necessitating the retreat of Colonel F.'s cavalry brigade at Adamapore. This bridge, being under the guns and rifle fire of the fort, is well protected.
- 9.—To guard against all possible contingencies, the precautions here described are advisable.

PROBLEM IV.

+ 7 Battalions Infantry. ‡
 1 Regiment Cavalry.
 4 Mountain Batteries.
 2 Companies Sappers.

‡ 1st Brigade—1st & 2nd Regts.
 2nd „ —3rd & 4th Regts.
 3rd „ —5th, 6th & 7th
 Regts.

Assume that you are the commander of the enemy's force at Kiwarna† on the morning of the 5th of January, Colonel C's force (Red) being disposed as shewn on map No. 3.

Your orders are to secure if possible the crossings of the river for an Army Corps following:—

- (A) Describe the steps you would take to this end, with details of what would probably happen from day-break (7 A. M.) until noon.

Show on map No. 3 the position of your troops at,—

8 A. M.

10 A. M.

12 NOON.

- (B) At noon you hear that your (Blue) cavalry brigade has been driven back on Agaripore and that Colonel F. is in possession of Adampore.

How would this intelligence affect your plans?

(With this Problem should be given (Map No. 3), with position of both forces (Red and Blue) at day-break marked).

SOLUTION OF PROBLEM IV.

(A). Seeing that the Red force have the advantage of position at the mouth of a narrow defile between the mountains and the river, my superiority in numbers will be of little use to me in a direct attack on the defile, except with heavy loss.

I therefore decide to keep them employed by a front attack while I send the greater portion of my force up the Kuchai nullah to occupy the heights of Haytor.

This will turn the defile, and also give me command of view and fire over the fort, and railway bridge at Pollockpore.

At day-break (7 A. M.) I issue the following orders:—

To O. C. cavalry—

“Send Officer's Patrols to Balapind and Kiwarna to obtain as much information as possible regarding the numbers, composition, and position of the enemy's force. Send patrols down the river to see if they can find any means of crossing. There is a ferry marked on my map at Chotea: see if the boat is still there. Keep your regiment under cover and out of range of the enemy's infantry.”

To O. C. 1st brigade—

“Advance on the village of Kiwarna near the river bank and engage the enemy at the entrance to the defile, but do not push your attack home. I am about to turn their position by gaining the Haytor plateau.

Occupy the attention of the infantry on the heights during my flank march to Kucha.”

To O. C. artillery—

“Send one battery under orders of O. C. 1st brigade to rising ground about $\frac{3}{4}$ mile S.-W. of Kiwarna to shell the enemy's position.”

To O. C. 2nd brigade—

“March on the village of Balapind under the hills and work round the enemy's right flank, but do not push the attack home. I am about to turn the defile by gaining the Haytor plateau.”

The remainder of my force, consisting of the 3rd brigade, 2 companies sappers, and Nos. 2, 3, and 4 mountain batteries, I should direct on Kuchai, keeping them as much as possible concealed in the deep nullah which runs in that direction.

From the time of issuing these orders until the 1st and 2nd brigades have reached their positions will take an hour.

The 1st brigade and guns therefore will not open fire before 8 A.M.

As I can see about half a battalion of the enemy on hill 2500, I resolve not to commence my flank march on Kuchai until my 1st brigade opens fire.

Starting at 8 A. M. my main body should be at Kuchai by 8-45, by which hour the enemy's position at the mouth of the Pass should be enveloped by the fire of my 2nd brigade working round from Balapind.

I should now order No. 2 mountain battery, 4 companies infantry, and 1 company sappers to the top of hill 2685 which has a command of nearly 200 feet over the the enemy's hill 2500. Here also I should establish a signalling post to communicate with my 1st and 2nd brigades.

This detachment should be able to open fire by 9-40 A. M., when the enemy's ridge would be enfiladed and their guns at the mouth of the pass exposed to reverse plunging fire.

In the mean time, with the rest of my troops, I should push on up the ridge leading direct to Haytor, keeping on the western slope so as to be screened from the enemy's view, and I calculate that I should be able to occupy the Haytor plateau without difficulty by 11 A. M.

By 9-45 A. M. it is most probable that the officer commanding the Red force, being exposed to front, flank, and reverse fire, will withdraw his guns into the pass and post them on one of the spurs. He will also retire his infantry into the pass, and, being now aware of my turning movement will reinforce his detachment on the heights by as many men as he can spare from the defence of the defile. He will also probably send some of his guns to the top of hill 2500 (10-45 A. M.)

I should therefore at this hour send word to the O. C. 2nd brigade at Balapind, by means of my signalling post on the hill to retire on Kuchai and move up to ridge 2685 which he should reach by 11-30 A. M.

At the same time (10-45 A. M.) I should signal to the O. C. 1st brigade to move along the river bank up to the enemy's first position, and to the O. C. cavalry to move up to Kiwarna.

By noon the position of my troops will be as follows:—

On Haytor—5th, 6th and 4 companies 7th Regiments.

1 Company sappers.

Nos. 3 and 4 M. batteries.

One battery will have moved to a position $\frac{1}{2}$ mile N, E. of the Haytor peak and will have opened fire on Fort Pollock.

At the low hills near the	}	1st and 2nd Regiments.
mouth of the defile.		No. 1 M. battery.
At Kiwarna		Cavalry regiment.
On hill 2685		3rd and 4th Regiments.
		4 Cos. 7th Regiment.
		1 Co. sappers.
		No. 2 mountain battery.

The enemy therefore, being under a converging fire from three directions, and having his retreat seriously threatened, must retire.

(B). The intelligence would not affect my plans. With the force at my disposal I have nothing to fear from a cavalry brigade of 12 or 16 squadrons. The country is unsuited for cavalry action, and from the position I now occupy they scarcely menace my retreat, which I can effect either by the way of Gulumarg, or by Adamapore, or by both.

REMARKS.

It will be seen that the peak of Haytor, the mouth of the Kiwarna defile, and the railway bridge (Map No. 3) form the three corners of an equilateral triangle. The Red force must therefore beat a rapid retreat if they wish to re-cross the river before the Blue force can reach the bridge.

PROBLEM V.

Special Idea.

Sir A. B. having heard by telegram on the morning of the 5th January, early, the state of affairs, now decides to leave one division behind him at Wellingpore and advance with the remainder of his Corps† on Fort Pollock.	
+ <i>Infantry</i>	
1st Brigade, 1 Battn. (3 battalions with Advanced Guard—Col. C. at Fort Pollock.)	
2nd Brigade, 4 Battalions.	
3rd " 4 " "	
1 Battn. Pioneers.	6 battalions infantry have been thrown into Fort Pollock by rail. The remainder of the force march, and bivouac for the night at Dalbat.
1 " Infantry.	
<i>Artillery.</i>	
1 F. Battery (one with Advance Guard.)	
3 M. Batteries.	
<i>Sappers.</i>	
3 Companies.	They resume their march on the morning of the 6th at 4 A. M., and reach Fort Pollock by 1 P. M.

The enemy, observing from the heights of Haytor the arrival of this strong reinforcement, after a heavy cannonade on the fort, withdraw their forces (2 P. M.) and concentrate at Kiwarna with only posts of observation on the hill.

His troops being fatigued, Sir A. B. decides to let them rest, and directs his sappers to replace in position the S. bridge of boats which is done by 3 P. M.

At 5 P. M. a telegram is received from Colonel F. at Adamapore.

"A division of the enemy advancing on Adamapore, are at Ruby. Strength 9 battalions infantry, 3 regiments cavalry, 3 mountain batteries, 2 horse artillery batteries, Probably arrive here 8 A. M. when I shall fall back on Kahorna."

PROBLEM.

(A). What should Sir A. B. do?

(N. B.—Part (A) should be answered before part (B) is set)

(B). Sir A. B. having decided to make a rapid march on Adamapore, leaves a battalion of infantry and 2 companies sappers in Fort Pollock to guard the crossings, with a squadron of cavalry for scouting purposes.

He marches on Adamapore at 2-30 A. M. on the 6th January.

+ 16 Squadrons.

1 H. A. Battery.

1 F. Battery.

At 7-30 A. M., he comes up with Colonel F.'s cavalry brigade † retreating, near Kosmai (Map No. 1) and sends

back patrols to Adamapore.

These report (8-15 A. M.) the enemy following back from cantonments.

He follows them up, and at 10 A. M. finds the blue force drawn up in position across the Gulmarg road as shown in map No. 4.

At the moment he is observing their position from Pir Rais, Sir A. B. receives a telegram from O. C. Fort Pollock.

"Enemy have crossed river in force at Chotea by means of rafts and have seized railway bridge, we have had to retire into fort. Both bridges of boats secure on left bank under guns of fort. Have wired to Wel- lingore for assistance."

PROBLEM—(Part B.)

Assume the rôle of Sir A. B. and describe how you would act and why.

Describe the movements of your troops, and show on Map No. 4, their position at the time you consider you have succeeded in your object.

[Maps 1 and 4, the latter with Blue position at 10 A.M., marked.]

SOLUTION OF PROBLEM V.

(A.) Sir A. B. is now in a position to assume the offensive.

It is very important that the division of the enemy marching on Adamapore should not be allowed to join the Blue division at Kiwarna.

If Sir A. B. attacks the latter force, they will in all probability retire on Adamapore *via* Gulmarg and, as the country is difficult for manœuvring, no pursuit, however vigorous, will be able to stop them. They will thus be able on the second day to effect a junction with their Adamapore division and the combined Blue corps will be stronger than Sir A. B.'s force.

On the other hand, if Sir A. B. decides to make a dash for Adamapore and defeat the advancing enemy, he leaves Fort Pollock practically undefended, for he can only afford to leave a small detachment in the fort as it is essential that he should make *certain* of inflicting a crushing defeat on the enemy at Adamapore.

He however reflects that even if the Blue force at Kiwarna did get over the river, there would not be much harm done. They would be

most careful in their own interests not to destroy the railway bridge, and, having no siege train, they could not take the Fort in a moment, and in 24 hours Sir A. B. hopes to be on his way back again. This decides him to adopt the second course of action.

(B.) Seeing the position taken up by the enemy, I conclude that they intend to fall back, in case of defeat, on Gulmarg, and so join their division at Pollockpore.

This must decidedly be prevented, and my efforts must be directed to turning their right flank and driving them back on Agaripore with as heavy loss as possible.

The telegram just received gives me little inquietude. Once the present force of the enemy routed, I can return by a six-hour march to deal with the Blue division at Pollockpore.

The lie of the ground is favourable to my project. There is a hill in the Buda Khus nullah behind which I can mass my troops. My cavalry brigade is close behind me at the encamping ground of Adampore. I therefore order up the horse and field batteries* and place them near the Police Chowki.

The head of my leading infantry brigade has reached the Tehseel station and can arrive at Pir Rais by 11 A. M., but the rear of my column cannot arrive before noon.

I order the leading (1st) brigade to Pir Rais and send 2 regiments up the Gulmarg road to feint a front attack.

I send word to my field battery following to hurry up, and on its arrival direct the O. C., R. A. to concentrate his fire first on the enemy's horse artillery near Bala, and then on their mountain batteries on hill D. My 3 mountain batteries arrive at 11-15 A. M.

I order them with the 3rd and 4th Regiments 1st brigade up the Lundai nullah and across to the back (east) of hill A. They arrive in this position at 11.40 A. M.

At 11-20 my front attack opens fire on the enemy's centre and right from the broken ground to the left of the Gulmarg road at about 1200 yards range. At 11-35 my 2nd brigade is concentrated at Pir Rais. I order this brigade also to the back of hill A, where they arrive by noon.

At this hour the whole of my force is up at Pir Rais and I march with my 3rd brigade, the pioneer battalion, and 1 company sappers to hill A.

The enemy will have seen somewhat of these movements, although the ground is favorable for concealment, and will probably draw in his left brigade to Paian.

I reach hill A, at 12-25 P. M. and immediately order the 3 mountain batteries into action on the crest. These concentrate their fire on the hostile artillery at 950 yards' range.

At the same time I push forward 2 battalions across the nullah against the enemy's right, and place a third battalion on the hill to support this attack by their fire.

I then explain to my brigadiers that I wish to make a pivoting movement on hill A., as my right, throwing forward my left as far as hill C.

On this point I direct my 3rd brigade and half the 2nd brigade, (in all six battalions) and on hill B., half the 2nd brigade (2 battalions)

From hills A to B, is about 1200 yards and thence to C, about as much more, so this movement will be completed by 1 P. M. when I give orders for a general advance in a N. W. direction so as to drive the enemy back towards Agaripore.

By 12.45 P. M., the Blue force on hill D, being unable to withstand the fire of 3 batteries and 3 battalions, will probably vacate the hill and fall back on their reserve (1 P. M.)

The position of my troops at 1 P. M. is shown on map No. 4.

As soon as the enemy begins to evacuate hill D, I move up my two field batteries to the head of the Buda Khus nullah and send word to my cavalry brigade to advance as far as the Police Chowki so as to be in readiness for a pursuit.

REMARKS.

(A.) Of course it is open to Sir A. B. to confine his action to a passive resistance behind the Sirhuddea but the course he adopts is more in accordance with the traditions of our army.

(B.) The Blue commander's front is about 2500 yards. This is as much as he can afford to occupy with the force at his disposal, and, as he desires to keep his main strength and reserves on the road which forms his line of communication with the Pollockpore division of his army, he is obliged to leave unoccupied a commanding hill of considerable size about 1000 yards from his right flank.

This is a favourable point for Sir A. B. and lends itself to his design of turning the Blue right.

Making a feint in front of the enemy's position with 2 battalions, he brings his brigades in succession, as they arrive, up the Lundia nullah and across to the back of hill A, where he masses them in concealment. During this movement his front attack and the 3 batteries massed near the Police Chowki keep the enemy's attention occupied. For his project to succeed it is necessary for Sir A. B. to make his left flank so strong that it will be able to clear away anything the enemy can bring against it. Otherwise the Blues might force their way past him and retire on Gulmarg.

He therefore waits till his whole force of infantry, with the exception of the 2 battalions engaged in the false front attack, is massed behind hill A, and then acts vigorously.

His action in moving up his field batteries to the position shown on map No. 4 is sound, as directly the enemy begin to fall back (as they must before the Red superior force) they can move on quickly and occupy the rising ground at E. and F. from whence they will be able to sweep the whole field up to the Palosund nullah.

The cavalry seems to be well placed. The time for their action has not yet come. As soon as the enemy are driven out of the position, and the protection afforded by the broken ravines into the plain W. of the Palosund nullah, then is their opportunity, but this is beyond the limits of the problem.

PROBLEM VI.

Special Idea.

The result of the battle of Adampore on the 6th January has been a complete victory for the Red force.

The Blue side have lost 1500 killed and wounded, and 2 battalions and a mountain battery have been cut off by the Red cavalry and taken prisoners.

The defeated Blue division has fallen back on Agaripore.

Sir A. B. has lost in killed and wounded 400 men.

By dark on the evening of the battle (6th) the Red division is at Adampore with 2 squadrons pushed forward to Ruby to watch the Agaripore road. The permanent way between Adampore and Pollockpore has been repaired. The rolling stock at Adampore consists of:—

	Locomotives.	Brake Vans.	1st Class Carriages.	2nd Class Carriages	3rd Class Carriages.	Horse Boxes.	Cattle Trucks.	Open Trucks.	
	1	2	1	1	13	2	5	7	

It takes 45 minutes to run from Adampore to Pollockpore.

There is a steam engine and tackle on the Badkoora bank for placing in position the bridges of boats.

There are a couple of rowing boats at the fort for crossing.

At 8-30 P. M. on the 6th, Sir A. B. receives a telegram from the Commander-in-Chief.

"Endeavours to capture General———'s division at Pollockpore without engaging in general action."

PROBLEM.

- † 3 Brigades infantry of 4 Battn. each.
 A Cavy. Bde. (3 Regts. 1 H.A. Batty.)
 A Regt. of Cavy. (1 Squadron at Fort Pollock.)
 A Battalion of Pioneers.
 A Batt'n. of Infy. (at Fort Pollock.)
 2 Field Batteries.
 3 Mountain Batteries.
 3 Cos. Sappers (2 Cos. at Fort Pollock)

Explain, with the force under Sir A. B.'s command † how this may best be done.

Give full particulars of the disposition of the troops and their movements until the Blue division capitulates.

(Maps Nos 1, and 5.)

SOLUTION OF PROBLEM VI.

Sir A. B. should divide his force, and endeavour to drive the enemy's division up the Kiwarna valley to the Gulmarg ridge which must be occupied in strength. Here, being caught between two fires, the Blue force should have to capitulate.

- 1.—Fort Pollock—Adam pore—Gulmarg, form a rough triangle with a mountain range running down the middle.
- 2.—From Fort Pollock to Adam pore, about 16 miles.
 Ditto ditto Gulmarg, „ 20 „
 From Gulmarg to Adam pore, „ 17 „
- 3.—In order to accomplish his design, the General should divide his force into three, sending to Fort Pollock the strongest detachment which should be superior to the enemy's force (whose strength he knows) at that point. A second, smaller detachment should be sent to occupy the Gulmarg ridge which commands the approaches from the S. E., and the smallest body should be posted at Adam pore as a reserve under Sir A. B. himself.
- 4.—The Fort Pollock column—Colonel G. commanding—should consist of at least—
 - 2 Brigades infantry (8 battalions.)
 - 1 Regiment cavalry.
 - 2 Field batteries.
 - 2 Mountain batteries.

As there are 1 battalion infantry, 2 companies sappers and a squadron of cavalry of Sir A. B.'s division in the fort, this will make the Red considerably stronger than the Blue force on the Sirhuddea.
- 5.—The Gulmarg column (Colonel H. commanding) might consist of
 - 5 battalions infantry.
 - 1 Squadron Cavalry.
 - 1 Mountain battery.
 - 1 Company sappers, while
- 6.—At Adam pore would be stationed the cavalry brigade (2 regiments) and 1 battery horse artillery. (There are 2 squadrons besides at Ruby.)
- 7.—The first thing to be done evidently is to occupy Fort Pollock and Pollockpore as quickly as possible with Colonel G.'s force which is strong enough to drive the enemy in the required direction. To this end, there being but one road, the railway must be utilized.
- 8.—The amount of available rolling stock is sufficient to carry in one train of 31 carriages any one of the following detachments, viz.—
 - $\frac{1}{2}$ Battalion infantry.
 - $\frac{3}{4}$ Field guns with $\frac{1}{2}$ No. of horses.
 - 2 Companies sappers.
 - $\frac{1}{4}$ Squadron cavalry, or
 - 1 Mountain battery.

Sir A. B. therefore calculates that he can by 8 or 9 A. M., on the 7th January place two battalions infantry and one mountain battery in Badkooora by train and that the rest of Colonel G.'s force, 'proceeding by route march, can arrive about an hour or so later.

9.—Train arrangements.

Train.	Leave Adampore.	Arrive Badkooora.	Return Adampore.	Detail.	Remarks.
1	22:00	22:45	24:00	½ Battalion Infantry.‡	
2	0:45	1:30	2:45	Ditto.‡	Total
3	3:30	4:15	5:40	1 Mountain Battery.‡	2 Battalions.
4	6:20	7:5	7:50	½ Battalion Infantry.	1 Mountain Battery.
5	8:15	9:00	...	Ditto.	

‡ These troops should de-train at Kutti Bala to avoid the enemy's patrols. If there is difficulty about de-training the mules (3rd train) there, fill up train with as many infantry as it will hold, including foot boards, and steam very quietly into Badkooora station.

10.—Colonel G.'s cavalry should leave Adampore by 3 A. M., at latest, followed by the two field batteries and one mountain battery.

7th January.—The cavalry and field batteries would reach Badkooora by 8 A. M., and the mule battery by 9 A. M.

11.—Total force at Badkooora, 9 A. M.,—

- 2 Battalions Infantry.
- 1 Regiment Cavalry.
- 2 Field Batteries.
- 2 Mountain Batteries.

12.—The remainder of Colonel G.'s division, viz.,—6 battalions infantry (carrying with them the 1650 prisoners taken on the 6th) should leave Adampore not later than 4 A. M., and should reach Badkooora by 10 A. M.

13.—The cavalry on arrival (8 A. M.) would push on vedettes to the river opposite the fort and open signalling communication.

Colonel G. who should arrive by train No. 5, will give orders for the north bridge of boats to be replaced in position, which the (necessary tackle and machinery being ready for use) might be done in two hours— say 11 A. M.

14.—The Gulmarg column, Colonel H. should march at 5 A. M., so as to cover the easy part of the road up to Bala by day-break. They will thus be able to reach Gulmarg by noon.

- 15.—Immediately on arrival at Gulmarg, Colonel H. should open heliographic communication with Adamapore. He will dispose his troops so as to cover all the approaches from the south-east, while his squadron should be pushed forward as far as Faizabad to secure early information of the enemy's approach.
- 16.—Sir A. B. himself remains at Adamapore with his cavalry and horse artillery.

ACTION AT FORT POLLOCK.

- 17.—At 11 A.M., the bridge being in position, Colonel G. commences crossing his division.
- 18.—The enemy, from the river bank north of Pollockpore, will open a heavy fire on the bridge.
- 19.—To keep this down, Colonel G. sends two battalions and his two mountain batteries up to the Keer ridge commanding the Blue position at 1,200 to 1,500 yards' range.
- 20.—By 12 noon the whole column, with the exception of the Keer ridge detachment, and the cavalry regiment, has crossed to the left bank.

‡ i.e., 1 Battalion Infantry.

2 Companies Sappers.

1 Squadron.

which he had left there, but not the original 2 companies which formed the permanent garrison of the fort. See general idea.

- 21.—Shortly afterwards Colonel G., taking with him the fort garrison,‡ moves his whole force in a southerly direction to attack the Blue position at Pollockpore (1 P. M.) (See Map No. 5.)

- 22.—The Blue commander finding himself attacked in a direction to throw him back on the river by a force equal to his own, and seeing that he is under the fire of two battalions and two batteries from the Keer ridge across the river at an effective range, considers it advisable to retire across the Sirhuddea in the direction of Kiwarna, where he has left his cavalry regiment. (1-30 P. M.)
- 23.—As it is Colonel G.'s object to left them do this (in order to carry out Sir A. B.'s scheme) he will not press home his attack, but allow them to retire quietly.
- 24.—By 2-30 P.M., the Blue force will have crossed and will be concentrating at the Kiwarna end of the passage.
This rear guard will probably be drawn up on the slopes of ridge (B) (map 3).
- 25.—Colonel G. now (2-30) orders his brigade on the Keer ridge to move to it's southern extremity and engage the enemy's rear guard.
Under cover of this fire, he sends across two battalions which drive back the Blue rear guard.
- 26.—Colonel G. crosses with his whole force to the right bank, and, his troops being fatigued and in need of food occupies for the night the spur of Haytor running from west to east opposite the island. (See map 3, and position at 4 P. M. map 5.)

8th January.—

27.—At day-break on the 8th the Red division will advance in southerly direction on hill (2500), which should be reached about 8 A. M.

When there they will probably see the rear of the Blue column some three miles distant on the Kahunay road in full retreat.

28.—Colonel G. will order a general pursuit, sending back to Badkooa for his cavalry.

29.—On arrival at the foot of the Gulmarg range (2-30 P. M.) the Blue commander finds these hills occupied by a strong force of Reds. Immediately in his rear is Colonel G.'s division which he knows to be stronger than his own. His men are fatigued by a difficult march of 18 or 19 miles and he is completely hemmed in.

30.—The Blue commander surrenders.

31.—On the first appearance of the Blue column the O. C. squadron at Faizabad signals to Colonel H. who heliographs news to Sir A. B. at Adam pore (1 P. M.)

Sir A. B. sets out at once for Gulmarg with his staff and one squadron as escort, and arrives at 3 P. M., in time to receive the Blue general's sword.

REMARKS.

Sir A. B. occupies Adam pore on the night of the 6th January with a force about double the strength of the hostile division he has been directed to capture without engaging in a general action.

Should he advance on Fort Pollock with his whole force, the enemy may escape him by the Kiwarna valley and Gulmarg. Should he, on the other hand, advance by the latter route, the Blue division may escape by the main road to Adam pore.

He must therefore divide his force.

11.—The Blue commander at Pollockpore by 9 A. M. knows all about the Red force at Badkooa, and, could he get at them, might endeavour to crush them before they are re-inforced. To get at them, however, he must either use the road from the railway bridge along the right bank of the river, which would expose his troops to flank fire from the fort, or make a long and difficult *détour* over the hills. He therefore prefers to remain where he is, as, having possession of the bridge, he can readily cross to either bank as the situation develops.

12.—By 10-20 or thereabouts the Blue general will know he is outnumbered.

13.—By 10-30 he will see the preparations for re-placing the bridge of boats, and will order his artillery to take up a position to open fire on the bridge.

16.—This is rather an important point. Sir A. B. has several contingencies to guard against, and must therefore remain centrally situated as regards his troops.



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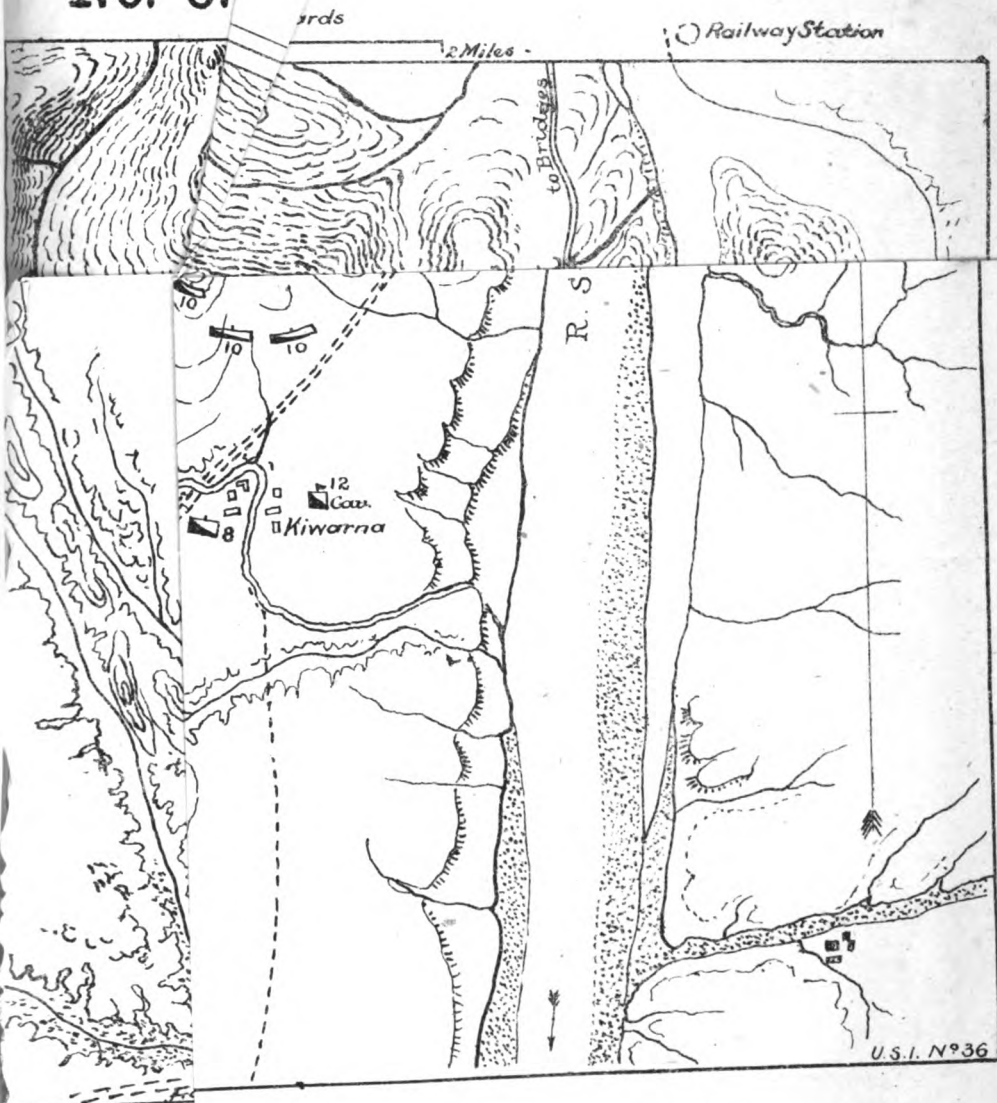
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No. 3.



Position

"Militia est potior."

Col. C's For
Enemy (Blu



- (a.).—The Blue commander may manage to out manœuvre Colonel G. and retire by the Adampore road when the Gulmarg column must return as rapidly as possible while the cavalry brigade and horse artillery hold the blue in check. Again (b.) the defeated Blue division, which on the 6th fell back on Agaripore, may receive re-inforcements and again advance on Adampore, when it would be necessary to direct Colonel H. to push on at once for Kiwarna, and Colonel G. to attack the enemy vigourously so that he may be as quickly as possible enveloped by the two columns. The cavalry brigade must then fall back on Fort Pollock and Sir A. B. re-assume command there of his united force.
- 22.—As the Keer ridge completely commands all the ground occupied by the Blue division, this fire will be very galling to the latter. They are now between two fires and must retreat.
- 27.—The Blue commander finding himself outnumbered and in a disadvantageous position, determines to fall back on Gulmarg and so retain his communications with his base at Agaripore.

He knows nothing, presumably, of the events of the previous day, and expecting to find the road open, starts before day-light to make a rapid march for the Gulmarg ridge. This once gained, he feels he can hold at bay treble his force.

THE STRENGTH OF THE TURKISH ARMY, AND SOME RECENT CHANGES IN ITS ORGANIZATION.

(With Map.)

Compiled from various sources, chiefly Russian,
By Lieutenant H. C. HOLMAN, 16th Bengal Cavalry.

The political situation in Turkey arising from the recent Armenian disturbances, renders an examination of the military resources of the Ottoman Empire a subject of peculiar interest at the present moment.

The admirable fighting qualities of the Turks have generally been ascribed to intense religious faith, and to a certain extent this is true. The *Kismet* of the Moslem has a great deal to say to the discipline, patience, and devotion of the Turkish soldier; but we must look further for that extraordinary courage and natural military instinct, coupled with the most implicit obedience to superiors, that have characterized Turkish troops under circumstances that would try the best and most highly trained soldiers in the world.

These qualities are inherent in the Turkish race, the breed of the real Ottoman Turk or Osmanli. The Turkish regular troops are recruited to a very great extent from this element, and only in a minor degree from the Arab, Circassian, Tartar, Kúrd, Albanian, and other races.

The Arabs hate the Ottoman Turks, but will always side with them against Christians. Next to the Osmanlis they are the most numerous among the rank and file of the regular troops. Mixed with Turks, the Arabs soon make good soldiers. They are very fanatical Mahomedans and a common religious faith soon makes them forget the enmities of race.

The Circassians are lax in religion, lawless, troublesome, and dishonest. They are at the same time haughty, overbearing, and impossible to discipline. The greater number of the Turkish Pashas and the vast majority of the Turkish officers are of Circassian origin, or have more or less Circassian blood in their veins.

Circassians are to be found, but not in very great numbers, among the rank and file of the Turkish regular troops, and like the Arabs, when mixed with Osmanlis, make excellent soldiers, but as a body, owing to their refractory and lawless habits, they cannot be depended upon. They generally form themselves into irregular troops in case of fighting, and the majority of the *Bashi Bazuks* in the last war with Russia were Circassians. The Circassian makes a better officer than soldier.

Albanians, Kúrd, Tartars &c., are only to be met with here and there in the regular army.

ORGANIZATION.

The Turkish army is strictly Mussulman. Those Mahomedans who come under the conscription are liable to be enlisted on attaining the age of 20. Exemptions are allowed in the case of supporters of families,

sons of widows &c., and also on payment of £ T, 60. Non-Mahomedans are entirely exempt, and pay a yearly tax of 36 piastres instead. Mussulmans are liable to military service for 20 years, *i. e.*, from about 20 to 40 years of age.

Using the German expressions now so universally adopted, service may be divided into three classes:—

- 1.—The *Nizâm* or Standing Army, comprising the *Muwâzaf* or soldiers with the colours, and the *Ikhtiât*, its reserve, composed of men who have actually served with the colours in the *Muwâzaf*.
- 2.—The *Redif* or *Landwehr*, divided into two bans or classes.
- 3.—The *Mustahfiz* or *Landsturm*.

The service with the colours in the *Nizâm* is usually 4 years; but it is sometimes more, sometimes less, the men of the *Ikhtiât* being merely on furlough and liable to be called back to the colours at any time. An enactment exists to fuse the two classes, or bans, of the *Redif* into one; but this has not been given effect to. From 130,000 to 140,000 Moslems become liable to service annually; of these about 50,000 pass into the *Nizâm*.

The Turkish Military Forces are organised on the territorial system. The whole Empire is divided into six *ordus*, or army districts, (see map.) The *ordu* districts are numbered 1 to 6, and the troops belonging to them are called *ordus*, with corresponding numbers. There is a special 7th *Ordu* quartered in Yemen and Hejaz. The head-quarters of the *ordus* and their territorial districts are as follows:—

<i>Head-quarters.</i>	<i>Where recruited.</i>
1st Ordu.....Constantinople	In Northern and Eastern Anatolia.
2nd Ordu.....Adrianople.	In eastern part of Rumelia and in Central Anatolia.
3rd Ordu.....Monastir	In the western part of European Turkey, and in South-western Anatolia.
4th Ordu.....Erzinjan.....	In Armenia, Kurdistan and Eastern Anatolia.
5th Ordu.....Damascus	In Syria, and the country about the Gulf of Alexandretta and to the east.
6th Ordu.....Bagdad.....	In Mesopotamia and the country east of the Tigris to the Persian frontier.
7th Ordu.....Sanaa (Arabia)...	Chiefly in the 4th and 5th <i>ordu</i> districts.

Each of the first six *ordus* is intended to furnish enough men for one army corps of the *Nizâm* and two of the *Redif*. These six circles are further divided into 24 divisional districts; 48 brigade districts; 96 regimental districts; and 384 battalion districts.

In addition to the seven army corps, Turkey has the following special forces:—

<i>Tripoli</i>	4 divisions of infantry (4 regiments of 4 battalions.) 1 brigade of cavalry. 3 field batteries.
<i>Hejaz</i>	1 division of infantry (4 regiments of 3 battalions.) 1 field battery. 1 mountain battery.

- Isle of Crete.* 2 regiments of infantry (3 battalions each.)
 1 regiment of cavalry (detached from 1st Army Corps.)
 2 field batteries.
 4 mountain batteries.

This arrangement for the defence of the outlying portions of the Empire does not in any way interfere with the mobilization of the six corps of the *Nizâm* and twelve of the *Redif*, which are intended to operate within the limits of Turkey proper.

THE NIZAM, OR STANDING ARMY.

The strength of the *Nizâm*, or Standing Army, may be taken at:—

- 284 Battalions of infantry *i e.*—
 264 Battalions of the Line.
 4 Battalions of Zouaves.
 15 Battalions of Rifles.
 1 Battalion of Frontier Mounted Infantry.

There are also 12 battalions of *Kur Oyghlu* (Tripolitan) Militia, for service locally in that country.

The Zouave regiments have two battalions each, one being Albanian and the other Tripolitan. As the men are mostly selected volunteers, these regiments may be looked upon as *corps d'élite*.

A brigade is composed of two line regiments; and a division of two brigades and a rifle battalion.

Each battalion has 4 companies, and each regiment, except Zouaves, 4 battalions. The strength of a battalion on a war footing is as follows:—

- 24 Officers
 62 Non-commissioned officers.
 836 Privates and musicians.

Total 922 of all ranks, with 51 horses.

The peace strength of these battalions varies. Roughly speaking, in the capital and on the frontiers, they are kept about 500 to 550 strong, whilst in other districts they seldom muster more than 250 to 400 men.

The infantry is armed with the Martini-Peabody rifle, with a four-edged bayonet 18½ inches in length. It is said, however, that there are 400,000 unissued Mauser magazine rifles in store, and 80,000 more are to be bought as soon as the necessary funds are available. From the latest information it would appear that the Mauser rifle is in course of distribution to the 1st, 2nd and 3rd Army Corps.

Cavalry.

The cavalry of the *Nizâm* consists of—

	Field squadrons.	Depot squadrons.
38 Regiments of the line.....	152	38
2 Guard regiments.....	8	2
Mounted infantry.....	2	
Total.....	162	40

Besides these there are from 61 to 64 regiments of the *Hamidiëh*, or irregular cavalry.

The guard cavalry is stationed in Constantinople, and belongs to the 1st *Ordu*. The first 36 line regiments are formed into six cavalry divisions, which correspond to the six territorial *ordus*. The 37th and 38th regiments are in garrison at Tripoli, whilst the mounted infantry serves in Yemen and belongs to the 7th *Ordu*. Each cavalry division is divided into 3 brigades of 2 regiments each.

At present each regiment and, it is believed, each squadron, of the *Hamidiëh* is commanded by an officer of the *Nizâm*. These officers are included among the 264 officers of the regular army who have recently been posted to the various regiments with a view to increasing their efficiency. By a new scheme the task of their instruction devolves upon the regular cavalry, which has to send an instructional half squadron to each regiment. As the tribesmen become sufficiently trained they will replace the regular officers who, it is said, are dissatisfied with their position; this measure will be in accordance with the original idea, which was that each regiment should be composed as far as possible of men of one tribe under their own tribal leaders. In cases where certain tribes have not been strong enough to supply sufficient men and horses for a complete regiment, squadrons have been formed which, though trained apart, would be brigaded together in war and formed into provisional regiments. The men are divided into three classes, (1) "Cadets," who serve between the ages of 17 and 20; (2) those who serve between the ages of 20 and 30; (3) those who serve between the ages of 30 and 40. In both the first classes the men are obliged to keep a horse fit for service, but, in the 3rd class, they are only required to do so when the 2nd class has been called out.

Although the government is supposed to supply weapons, ammunition and standards, no arms have yet been issued to the *Hamidiëh* cavalry. The men have to find their own clothing, equipment and saddlery. The uniform and horse furniture are of three different patterns to suit Arabs, Kurds and Turkomans.

These men have lately been shewing an activity in massacring the defenceless people of Armenia, which was hardly contemplated by their government at the time when they were raised, and their want of discipline renders their military worth rather doubtful.

A *Nizâm* cavalry regiment has, on a war footing—

39 Officers.

647 Other ranks.

Total 686 of all ranks, or 854, if the dépôt squadron, at war strength, is added, and 880 horses, inclusive of train.

Theoretically the *Hamidiëh* cavalry regiments have a minimum establishment of 512, and a maximum of 1,152 of all ranks, and are composed of from 4 to 6 squadrons.

The peace establishments are said to be very low, especially with regard to the horses, and 80 troopers per squadron seems a reasonable computation of the average reached.

1 Mil

The army estimates for the year 1894-95 have been fixed at £T. 17,000,000.

The peace strength of the army, including all branches, is put at 220,000 to 225,000 men.

RESERVES.

Theoretically, the *Ikhtiat* should be numerous enough to bring the battalions of the infantry of the *Nizam* up to war strength, to say nothing of the other arms. It is doubtful, however, whether this would really be the case on mobilization, as it is very far short of its establishment. This may be attributed to a high mortality, due to the unhealthiness of the climates of Hejáz, Yemen, and Mesopotamia, and to bad medical arrangements, bad food and clothing, bad housing, hardships, general apathy, neglect and, finally, desertions, which are very rife in certain districts owing to discontent brought about by arrears of pay, privations, and breaches of faith on the part of the government.

The Redif, or Landwehr.

The *Redif* has two classes, in each of which the men serve 4 years. It is composed, (1) of men who have passed through the *Nizam*; (2) of men who have not been taken in six successive conscription drawings for the latter. Theoretically, the *Redif* ought to be called up annually for 30 days' training, but this is seldom carried out in actual practice, owing to want of funds. According to the scheme started in 1889 the *Redif* is organized in *ordus* and divisions corresponding to those of the *Nizam*. Consequently, there should be one *ordu* of each class of *Redif* attached to each *ordu* of the standing army, except the 7th, which, being stationed in Arabia, has naturally to depend upon the others for its recruits. Thus, each of the first six territorial *ordus* ought to supply eight regiments of the 1st, and eight of the 2nd class *Redif*, each regiment consisting of 4 battalions. This would give a total of 384 battalions for the 6 *ordus*, but it appears that only the first five have their full complement, whilst the sixth can only produce 32, so that the number of reserve battalions may be fixed at 352. The divisional head-quarters form, in peace, the recruiting centres for the *ordu* of the *Nizam* to which the *Redif ordu* is attached. Considerable attention has been paid, since the last war, to the organization of the *Redif* and the divisional staffs are all said to actually exist.

Every battalion has its depot, which is also the recruiting centre for the corresponding battalion of the *Nizam*. The whole of the recruiting arrangements of the latter are in the hands of *Redif* officers. At each battalion depot there is a *Bimbashi* or *chef de bataillon*, an adjutant, a pay-master, and a small permanent staff of non-commissioned officers and men. The remaining, or company officers, 16 in number, are all permanently on leave, but are liable to be called up for the annual 30 days training.

Each depot should contain the arms, ammunition, clothing, equipment &c., for its battalion, but these are seldom kept up in sufficient quantities.

The *Redifs* of Rumelia, Macedonia, and Anatolia are undoubtedly the most loyal to the Sultan. They are composed almost entirely of Osmanli Turks and would come forward without a murmur were the Empire threatened. The *Redif* of the 4th *Ordu* (Armenia and Kúrdistan) could not be depended on to the same extent, especially if the assailants were Russians. The *Redif* of the 5th and 6th *Ordus* (Syria and Mesopotamia) would be collected with the greatest difficulty, especially in the case of a Russian invasion.

Theoretically, the establishment of a *Redif* battalion, on a war footing, should be the same as that of a *Nizám* line battalion, but, as a matter of fact, it often amounts to 1200 of all ranks.

The Mustáphiz or Landsturm.

The *Mustáphiz* is practically unorganized. It is said to amount to 120,000 men, but there would be the greatest difficulty in getting them together, providing them with proper arms, clothing, equipment, and officers.

GENERAL ORGANIZATION.

A *Nizám* infantry division on a war footing would have :—

16 Battalions of infantry of the line.

1 Battalion of rifles.

1 Regiment of field artillery, 36 guns.

A 1st class *Redif* infantry division would have :—

16 Battalions.

1 Regiment of field artillery, 36 guns.

A 2nd class *Redif* infantry division would have :—

16 Battalions.

18 Field guns.

A cavalry division would have :—

6 Regiments or 24 squadrons.

1 Battalion horse artillery, 18 guns.

A *Nizám* army corps would have :—

2 Infantry divisions	} representing	{	34 batteries
1 Cavalry division			24 squadrons.
Other troops			72 guns, field artillery.
			18 " horse "
			1 engineer battalion.
			1 telegraph company.
			1 train battalion.
			1 ammunition train.
			Departments.

Some interesting articles have recently appeared in the Russian papers on the subject of the Turkish army, and the opinions expressed in them all point to the fact that, however much the German generals and colonels who are striving to reorganize it after the Prussian model may complain of the want of funds, and the apathy of the authorities, the results of the reorganization of Turkey's armed forces, commenced in the eighties, are by no means so insignificant as the members of the Prussian committee affirm.

With reference to organization, the greatest attention is paid to the fulfilment of the new plan of military territorial sub-divisions of the country, in conjunction with the doubling of the former number of centres of concentration. In the Constantinople, Adrianople and Monastir military districts this measure has been carried out, but, in the Damascus district, the fulfilment of the projected reform is rendered exceedingly doubtful by the scantiness of the population, want of accommodation at the new points of concentration, and the weakness of the Turkish authorities. In the Bagdad district, the old number of centres of concentration, 32, remains, the 54 which have been mapped out being merely on paper, and even this latter number falls 10 short of the complement, as laid down in the scheme.

MOBILIZATION.

Several new measures have been taken for the regulation of the mobilization of the army. Check sheets are kept, check musters of the men of the *Redif* are held from time to time, and stores of uniform and equipment are also being collected at the centres of concentration. The appointment of officers of the head-quarter staff to reserve divisions has been of undoubted use, and most beneficial results are anticipated from the experiences gained by trial mobilizations. The object of these trials is to test the efficiency of the new organization of the *Redif*. It is carried out by divisions, each *ordu* being called upon to mobilize one of its reserve cadres.

The experiment began by the mobilization of the Aleppo Division of the 5th *Ordu*. Judging by the scanty information contained in the newspapers, the first trial was thoroughly successful. The muster of the reservists, their armament and equipment, and also the organization of the several parts, were carried out in a very short time. Thus, the reservists of the 73rd Regiment of the 3rd Division, who came from the northern parts of Aleppo, assembled at the point of concentration in 24 hours. The mobilized divisions remained with the colors some time, and were employed in drills and manœuvres, but there was no general divisional assembly on account of want of funds, which has also caused the postponement of similar experiments in other districts.

At the present time, however, the 4th and 5th Army Corps are being mobilized. This step has been rendered imperative by the necessity for putting down the disturbances which are distracting Turkey. In each of these districts the whole of the 64 reserve battalions are being called to the colours. The result of this trial will be very interesting, because it will be a good test of the scheme for organizing the reserve. It will not, however, show us the general state of preparedness for mobilization of the Turkish forces, because it extends neither to the engineers, nor to the transport, medical, and other departments of the army, which should properly be included in the scheme.

The term of service for the troops in the Yemen district has lately been reduced to two years, on account of the exceedingly unfavourable climatic and sanitary conditions of Arabia. In the remaining *ordus* no change has taken place in this respect and the old rule of four years

(a.)

22.

27.

country. The projected improvements in horse breeding are being carried out with extreme slowness, and the Government horse farms have not yet been started. The serving of mares belonging to private persons by Hungarian stallions, supplied free by the Government, on condition that the first foal shall be Government property, promises some success. Last year 15 stallions were lent, and 90 foals received.

DISPOSITION OF TROOPS.

One of the greatest weaknesses of Turkey's military position is, indisputably, the scattered distribution of her forces over a territory of considerable extent, and the insufficiency of means of communication for rapid concentration. But this weakness must not be exaggerated. Telegraphic communication has recently been established between the head-quarters of corps and centres of concentration, and new strategical roads are now in process of construction. Turkey is preparing for a struggle on the Caucasian frontier and maintains, in the Erzerum, Damascus, and Bagdad provinces—

85 Battalions.

87 Squadrons.

84 Batteries.

which can be reinforced by :—

190 *Redif* battalions.

59 Regiments of irregular horse.

On the Balkan frontier there is a force of—

125 Battalions.

23 Squadrons.

117 Batteries.

With a reserve of 190 Battalions of the *Redif*.

The other possible theatres of war are not so important and demand fewer troops. "Having thus grouped her forces, Turkey has fulfilled the fundamental principles of imperial defence, and may consider herself prepared for all emergencies." Although the operation of withdrawing troops from one frontier to the other would be difficult, it would be by no means impossible, because some delay must of necessity occur in the development of warlike operations on both these important possible theatres of war.

The Turkish troops of the European group are divided almost equally between the eastern and western parts of the Balkan Peninsula. In the Constantinople and Adrianople districts are located :—

61 Battalions.

58 Squadrons.

78 Batteries.

In the Monastir district :—

64 Battalions.

35 Squadrons.

51 Batteries.

The strength of the garrisons of the western part of the Balkan Peninsula shows how strongly Macedonia is held by troops and what slight chances of success remain to insurgents operating in that district.

The Kossovo division serves as the military centre of the district and in it are stationed :—

25 Battalions.
17 Squadrons.
10 Batteries.

Whilst the Salonica division has :—

11 Battalions.
10 Squadrons.
24 Batteries.

This force, if handled with anything like ability, ought to be sufficient, not only to put down any rebellion, but also to resist a real enemy in case of interference on the part of Bulgaria or Servia. The 1st *Ordu* could serve as a general reserve for the troops of the Monastir district, and its conveyance to Macedonia is made easy by the construction of the railway from Constantinople to Salonica.

In spite of her strength in Macedonia, Turkey has taken some new measures with a view to ensure a state of greater preparedness on her Balkan frontier. Although the mobilization of two reserve infantry brigades in the Monastir district, as also the mobilization of the Mosul reserve division, is merely the fulfilment of the plan for testing the readiness of the reserves, still the locality for its mobilization was not chosen without an object. In any case there can be no doubt of the usefulness of the *Redif* brigades. The armament of the Adrianople fortifications is being strengthened with a similar purpose.

"Finally, we may say with conviction that, if complications arise, Turkey will prove better prepared than the state of the "*Sick Man*" would lead us to suppose. It is said that, under the new system, Turkey could put 400,000 men into the field two or three weeks after the order to mobilize. If the war should be protracted and an extreme effort be necessary she might call up yet another 400,000 men, or a total of 800,000. This must be taken as the utmost limit of her resources." She has a supply of modern weapons, articles of clothing and equipment for the whole army and she has, on her European frontiers, on the Bosphorus and Dardanelles, fortified *points d'appui* which would be of great service to the army.

She will soon have to make up her mind, however, to a whole list of expenses, necessitated by her military needs. Krupp and Mauser have to be paid ; 2,600 or 3000 cavalry and artillery horses have to be brought, and also 80,000 Mauser rifles, as the 400,000 in possession of the government are considered insufficient, and, finally, new projectiles must be procured from Krupp for the field artillery.

THE STRENGTH OF THE TURKISH ARMY AND SOME RECENT CHANGES IN ITS ORGANIZATION.

then arrangements were excellent, and things were carried out all along without a hitch. Of course one must remember that the country is one that they are thoroughly acquainted with, and that there was no unknown factor in the case; but allowing for all that, it is not an easy matter to keep 120,000 men on the move for ten days without something going wrong. They kept everything very dark, and we had to

NOTES ON THE FRENCH GRAND MANŒUVRES OF 1895.

By "RAYON DORÉ."

With Sketch Map.

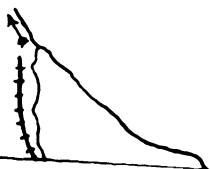
I promised to give you an account of the French Grand Manœuvres as I saw them. As you may not have studied the "*General Idea*" of the campaign in the Newspapers, I will briefly sketch out the principal points so as to make my notes clearer. There were two phases—the first was the operations of two *Corps d'Armée* under General Jumont against a similar force under General Négrier. The former concentrated at Neufchateau, the latter at Langres; after some brigade and divisional operations before, and immediately after mobilization, the two armies marched against each other and had a grand battle at Parnot, in which they both adopted the tactics of trying to turn the enemy's right, the result being a sort of circular battle, with a great struggle for the possession of that village. I did not see this portion of the affair, but General Jumont was generally admitted to have beaten General Négrier all round. General Jumont struck me as being a particularly fine looking man, and every inch a soldier. After Parnot, the two armies concentrated in the vicinity of Contrexville, and came under the command of General Saussier. This phase represented the operation of driving an invading army back across the Moselle. The enemy was a skeleton one, consisting of a weak Army Corps, representing about four times that force. It was under the command of General Giovanninelli. Of course the whole affair was cut and dried as far as the eventual issue of the campaign was concerned, for naturally the French were not going to let their home army be beaten. General Giovanninelli seemed to handle his forces very skilfully, and fought a series of losing battles exceedingly well. I followed the whole of this phase of the manœuvres very carefully, and was much interested in them. I would not have missed it for anything. It has been a wonderfully instructive lesson to me. The principal thing I have learnt is what I may call the *perspective* of a campaign. When one reads the history of large operations, one has a map before one, and one works through the different stages step by step; but until one has seen something of the sort actually carried out on the ground, it is very hard to *focus* the whole thing, and to really realise what an extent of ground they cover. This I shall now be able to do. It has also given me a good insight into the methods employed on the Continent for moving large bodies of troops.

I must say the French seemed to have an uncommonly good Staff. All their arrangements were excellent, and things were carried out all along without a hitch. Of course one must remember that the country is one that they are thoroughly acquainted with, and that there was no unknown factor in the case; but allowing for all that, it is not an easy matter to keep 120,000 men on the move for ten days without something going wrong. They kept everything very dark, and we had to

have an excellent plan of carrying a ration of coffee, sugar, and some firewood. As soon as the day's operations were over, they gave the men a halt, when they immediately prepared their coffee, drank it, and marched off in a quarter of an hour or so. Between every six men they carry one complete camp kit including a *tente d'abri*, cooking pots, lantern, and a small spade &c. Their discipline seemed excellent, always quiet and orderly, and obeying their orders most promptly.

**ROUGH SKETCH MAP
OF THE THEATRE OF OPERATIONS
TO ILLUSTRATE**

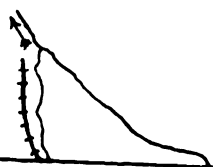
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OCCASIONAL NOTES.

THE ROLE OF CAVALRY AS AFFECTED BY MODERN ARMS OF PRECISION.

Notes from a lecture delivered by Captain JAMES, *p. s. c.*, late *R. E.*, before the
Aldershot Military Society.

The subject of this lecture may be said to divide itself into two parts—that which had to do with observation by cavalry, and that which had to do with the combat. The improvement of modern weapons had to do with both of these phases of cavalry work. There is one patent fact to be considered at this point, and that is that the increased range of modern fire-arms has brought about the initial deployment of lines on both sides at far greater distance than before. To take the weapons in their order, artillery ranges are far greater than formerly, and this doubtless has had some effect. For instance, a certain French officer said that at 1800 mètres two guns beat off a cavalry regiment. It may have been so, but it was no ordinary affair, and must not have too much value attached to it. But at close ranges it is extremely doubtful whether modern guns are very much more effective than old ones. I doubt if the old smooth-bore when firing case-shot was not in some respects better. Generally speaking, I do not think the effect of long-range artillery fire is much greater as regards cavalry, because the great mobility of cavalry prevents them making themselves a too conspicuous target. Nor do I think that the introduction of smokeless powder has materially affected cavalry. But here I must speak of the infantry rifle and its various improvements, such as flat trajectory, long range, and increased penetration. Cavalry suffer now up to twelve or fifteen hundred yards, but at distances of five or six hundred yards, modern infantry fire became positively annihilating, for in addition to rapidity of fire, the modern bullet will go through three or four men or horses. So far too, as smoke is concerned, infantry fire has increased in efficiency, as they can see better themselves, and their own position is no longer indicated. With regard to machine guns, for the purposes of my lecture they need only be looked upon as concentrated infantry fire. So much for modern firearms. Now what is to be their effect? This will have to be dealt with under two heads—observation and fighting proper. Smokeless powder has introduced an unknown element. Observing parties will see bullets dropping about, but owing to smokeless powder they will be unable to tell whether it is the effect of many firing slowly, or of a few firing rapidly. Smoke would have helped them to solve this important initial problem. Here was the unknown, and the unknown has always played a great part in war. To know what is going on, cavalry will now have to work a great deal on foot.

I should be sorry to introduce a bastard cavalry like the old dragoons of which Johnston spoke so disparagingly. Hybrid dragoons have never been a success; still there is no reason, in my opinion, why cavalry

should not fight on foot. The 14th French Dragoons at Spicheren were a capital example of what a small body of men could do if properly led both on horse and on foot. They practically stopped a column of Prussians when emerging from a wood. It would be a rather large order for me to say that we should dismount a considerable portion of a cavalry brigade, because I take it that mounted infantry is the proper adjunct to cavalry, particularly in work of this kind. They possess great mobility; and if they can do something of this reconnaissance work, they will be of great use to cavalry. It is very hard to reconnoitre a position. It can not be done on horseback. If modern firearms necessitate more distant deployments, it follows that it will be more difficult to find out a position held by infantry, particularly with smokeless powder, and the only way to do it will be on foot. Cavalry will have to be dismounted unless mounted infantry has the task relegated to them. A German authority has pointed out two tendencies in regard to the size of patrols in war; one is to have a great patrol so as not to be put out of action, and the other is to have a small one so as not to be perceived. But if small patrols are used it does not follow that the exploring line has also to be small. The Franco-German War was no criterion in this respect, as in one case the cavalry meant business and on the other side they did not. I must deprecate the idea of troopers in such cases being sprinkled about as though out of a pepper-box. We must have our front line strong enough to be able to penetrate our opponent's line, and it is in my opinion further necessary that in order to effect this our patrols should be strong enough to act as striking or fighting forces, yet still as small as possible compatible with circumstances. I would apply this argument to a British cavalry division with mounted infantry, horse artillery, and mounted engineers, by placing a brigade as a complete reserve, and using the mounted infantry and two regiments in the first line, and sending out from the contact squadrons the patrols.

Of course circumstances will always moderate conduct, and we can not lay down a sealed pattern form, which unfortunately books usually do. The wisest leader adapts his forces to the necessity of the case. Napoleon based his manœuvres upon the knowledge of the men opposed to him. He obtained information as far as possible as to the personal characteristics of his opponents, and therein lay much of his success. How difficult it is to explore has been shown in many instances. At Solferino two large forces tumbled across each other; at Königgratz two armies were quite ignorant of the presence of each other two days apart. The misfortune at Gravelotte was due to the bad reconnoitring of the Prussian cavalry. Hence it appears to me that we cannot make too much of patrolling instruction for cavalry on foot, unless we intend to greatly supplement them by mounted infantry patrols. We must remember however, that the mounted infantryman is a much less valuable and less costly man than the cavalryman. Cavalry take much longer to train, are too useful in their proper sphere to be drawn upon unnecessarily, and if we get our cavalry eaten up by a system of patrolling we will find that in the hour of battle we will have none left. It is far better, in my opinion, to depend upon mounted infantry than run such

a risk. Moreover, it is a bad thing to teach cavalry that its action is mainly on foot, for then they will begin to feel that they have ceased to be cavalry. The origin of horse artillery was to provide fire force for the cavalry, to overcome resistance, and prepare the way for cavalry proper. The action of horse artillery in the cavalry combat is chiefly the invention of the theoretician. Among the many instances of cavalry fighting there are few where guns have acted as they do in peace manœuvres, inasmuch as cavalry charges are affairs of a moment. To quote the words of a foreign cavalry expert with regard to such moments. "I perceive them, I am in their midst, and they lay down their arms." There is very little time for preparation for an actual fight between cavalry and cavalry. This is why I hold that the more powerful the horse artillery gun is the better. I think it would be far better for the horse artillery gun to be shorter and have a heavier shell than that which they now use. I do not think their mobility would be seriously interfered with. It is, perhaps bringing their weapon nearer to the howitzer, but it is certainly making it more effective. Turning to the cavalry combat, it seems that there are two schools of thought to be considered, when dealing with cavalry taking part in a general action. I am of opinion that there are no tactics of one arm only; we have to deal with the tactics of the three arms combined. One school says that cavalry should act in masses, as in the days of Marlborough; and the other, that they should act in two ways—namely in small bodies in actual line or lines of battle, and in masses on the flanks. The history of the last hundred years shows that on the whole the latter form has been the more successful. We must remember that large masses of cavalry require large fronts, and are liable to be exposed to infantry fire; and it is further improbable that in ordinary line of battle sufficient intervals would offer, on which they could form and act. In gigantic operations opportunities might occur. I do not say that when many Army Corps are engaged there will not be such intervals, for there will probably be large gaps. I could quote several battles to show that great effects have been obtained by the action of small bodies of cavalry at moments when both sides were just wavering, doubting whether it was time to go on or go back, when a charge has speedily determined the crisis. In the south of England, where any future fighting will take place, there are few places where we could possibly put men into line as in foreign armies, owing to the close country. Wide outflanking movements seem to me to be the essential feature of the future war. Cavalry getting round the flanks may be thought little of by an opposing general, but the fact that they can get round is significant, as no one knows what may be behind them, and they have a great moral as well as physical effect.

Having now dealt with cavalry at the commencement of the battle, and in the battle, I will now proceed to touch on the use of the arm for completing a victory. We all talk about pursuits, but it is exceedingly difficult to find them in history. The pursuit at Waterloo when analysed comes down to one battalion and a squadron, with a drummer on horse-back to creat effect. In the Franco-German War there were no

instances of real pursuit ; there might have been one at Verve, but the cavalry were too far behind. In the older wars we have some examples, but they are rare ; but because a thing is rare in history, I do not say that we will never have it in the future. In the determination to end a war, which will be so disastrous in the future to both sides, pursuits will be undertaken, pursuits to the bitter end, and it is here that the masses of cavalry and cavalry divisions will be of the highest utility. So I do not think that the rôle of cavalry is at an end. It will always be entrusted with the work of exploration, and the work will be more difficult because of the increased range of weapons ; the combat will remain about the same, and though cavalry will not have quite such large numbers in their line of battle, their duties will be as great as ever ; they will be a little differently employed in short, but I am quite sure we shall see just as great effects from cavalry in modern fighting as of old. I will now proceed to consider the organisation of cavalry so as to meet modern requirements. The cavalry division represents the highest organisation of its arm for war purposes—self-reliant, capable, and independent action. Observation is chiefly an affair of squadrons, supported by regiments and brigades. The squadron is a universal factor, but the brigade differs in England from that of other countries. On the Continent two regiments form a brigade, in England three ; but we must remember that the size of our regiments is much less than foreign regiments. We muster about one hundred men in our squadrons, whereas theirs average about one hundred and fifty, so that their two regiments comprise about as many men in brigade as our three. I would suggest that uniformity of pace and smooth manœuvring are indispensable whatever front is presented, and there is a good deal to be said for the schools, both in favour of big front lines and the alternate form. This question of what proportion of troops should occupy the front line is a very important one, and deserving of most careful consideration.

I now turn to the important question of the cavalryman. A cavalryman is a trained man on a trained horse. The training of the horse is a most important matter, and if they are so valuable on account of their training, so in the natural order of events must a higher training be expected in the future than in the past. The distance between lines and the more rapid pace renders it absolutely necessary that the cavalry should be trained to move as a whole. The addition of untrained horses renders a regiment useless. Before 1866 the Prussians filled up their ranks with untrained horses, but the moment the war was over they abolished that system. For shock tactics it is absolutely necessary to train cavalry in larger units. In England the authorities have been too apt to look upon cavalry as a kind of superior police, instead of valuing and training them for the purposes for which cavalry primarily exists. It is difficult to conceive a cavalry regiment being efficient if the units are not kept together. If they are to work together in war they must be kept together in peace, and they must be the most highly trained of all in the Service. They must have proper organisation, right training, and able leaders. They must have no remounts in the ranks, and

we must look upon officers and men as not being able to lead unless they can also instruct. Uniformity of pace, uniformity of speed, with all the necessary factors towards its accomplishment must be insisted upon, so that the charge should not be the signal for disorder, and the line should be so able to go on after the sound just as it did before. The charge should have the same effect as the rolling of a ruler across a board against chessmen, otherwise there is no shock. This all points to the training of men and horses in the highest duties of their arm, and this lies chiefly in the squadron unit. I will now turn to the rank entire. Napoleon said the only use of the rear rank was to tumble over the front rank. I do not mean to disparage the rear rank in so far as it is concerned in filling up the blanks in the front rank, but for all other purposes I can not help looking upon it as affording a bigger target to the enemy. I am of opinion that machine-guns could be made to fire without unlimbering at short ranges of say 600 and 800 yards, where the breathing of the animals would not materially effect the fire. This would be a great gain in rapidity. Another point I should like to suggest is the use of the revolver. For very many years we have been trying to marry fire with shock tactics, and it seems to me possible to have a revolver troop of forty or fifty men in a regiment who could act independently, and who when the collision took place could gallop to the flank and open fire. In America they got distinct value out of the revolver used in that way. Lastly, as to the question of dress. Where cavalry had to act as it does with enormous rapidity, it is absolutely necessary to have a distinctive dress so that it can not be mistaken for opposing cavalry, as happened at Quatre Bras. Here I will conclude my remarks, and I will only add that, although I have criticised, I have great belief in cavalry, as have also many distinguished individuals, such as Bismarck. Cavalry has done great things in the past, and I see no reason why it should not in the future. To do it, however, we must bring ourselves up to date and indeed go beyond date, because deductions from war always have a certain weakness in respect to correct comparison between different periods. The wisest soldier seizes the best weapon and adapts himself to the present organisation, so as to produce a combination which will be really effective in future.—*Broad Arrow.*

THE TECHNICAL TRAINING OF RAILWAY TROOPS IN GERMANY.

Great attention has always been paid in the German army to the technical instruction of railway troops, and the practical exercise carried out this year between the ranges at Kummersdorf and the camp at Loburg, mark a new departure in the field training of this important arm.

The principal features of the course just concluded were not only the laying down of a section on the normal gauge from Kummersdorf to Janikendorf, but also the construction and working of a light field railway on the 0·65 gauge from Janikendorf to Loburg, having a total length of 95 kilometres. The force collected for these instructive operations consisted of 10 companies at war strength, eight Prussian, one Bavarian, and one Saxon.

The Germans attach very great importance to the organization and practical working of narrow-gauge field railways which they would utilize on service for the maintenance of direct railway communication between their troops at the front, and the termini of the normal gauge permanent rail-roads which constitute their principal lines of communication in war.

Hitherto it has been the practice to maintain communication with the base by means of the waggons of the Commissariat and Ordnance trains, and the regimental transport of corps. The organization and working of these unwieldy columns of carts was always a source of trouble and anxiety to the Staff, for in spite of great exertions their progress was generally slow, and the road, besides being constantly blocked by vehicles, were often temporarily closed for the repairs rendered necessary by an incessant traffic. Inconveniences of this kind are so obviously incompatible with the movement of large bodies of troops, and the requirements of modern war, that it has been decided to make use of light field railways, in the hope that they will obviate, or at anyrate lessen, these difficulties.

It has been clearly demonstrated by the work accomplished between Janikendorf and Loburg, that the laying of a light field railway can be carried out without any preparatory labour.

The method pursued is as follows. A party of tracers is detailed to mark out the alignment of the railway. It generally consists of from four to six officers, some of them mounted, who to prevent hitches are sent on ahead, accompanied by as many men as are indispensably necessary. They are required to mark out from 10 to 15 kilomètres* per diem, often over totally unknown country, a task requiring a well trained eye for ground, readiness of resource, and great promptitude of decision.

The "tracing party" is followed by a bridging company and the units told off for the construction of the track. The latter prepare the surface for the rails—as often as possible on the natural level of the ground—and in order to avoid the labour of making embankments and excavations, the line is carried along the sharpest of curves, and over gradients as steep as $\frac{1}{15}$.

Every conceivable shift and expedient is resorted to for bridging rivers, roads, streams, and other obstacles. Frequent use is made of wooden viaducts constructed on the American system, and the portable iron bridges designed by Captain Lubbeke of the Prussian Army. By the use of the latter a bridge 60 mètres in length was constructed in a day and a half. Two field railway trains were employed in the transport of the tools and plant required for this work.

The next units to follow are the companies told off to lay the rails. The latter consist of double lengths 5 mètres long. The plant is brought up by the railway in trucks capable of carrying 30 lengths of rail apiece, weighing in the aggregate 100 quintals,† and giving 150 mètres of line when laid. It takes the men on an average from 8 to 10 minutes to un-

* 1 kilomètre = 1093 yards. † 1 quintal = 100 lbs.

load a truck and lay the rails brought up by it. In rear of the layers follow the rivetters and embankment makers, who by every description of material available, such as timber, planks, and earth-works, secure the rigidity of the line.

Working on this system, the troops succeeded in laying the first 50 kilomètres of railway in five days, *i.e.*, at the rate of 10 kilomètres a day. By working at night, the remaining 45 kilomètres were finished in three days, *i.e.*, at the rate of 15 kilomètres in 24 hours.

As fast as each section was ready, it was opened for traffic and utilized at once for the transport of railway plant, &c.

Six companies out of the ten were always at work at a time; the remaining four were kept in reserve to act as a relief to the others.

The *Reichswehr* reports in the same connection that the German railway brigade, at their chief practice ground at Schoenberg, near Berlin, recently built a military bridge nearly 600 ft. in length, across an extensive and deep excavation, the actual bridge being about 300 ft. long, and the approaches about 150 ft. each. The bridge rested on fifteen trestles and pile piers, the large spans being supported by six strut-frames of very strong timber. The whole work was completed by two companies of railway troops in four days, and tested by running over it repeatedly, at various speeds, a special railway truck loaded with thirty tons of old dismounted guns. In this experiment the flexion amounted to 1 to 2 in. only, instead of 3 in. as calculated. Our contemporary adds that a curious illness has developed among the railway troops, the men affected by it being those who were chiefly engaged in handling the sleepers, which are now impregnated, for better preservation, with creosotic carboline, and although the men wear thick gloves when working, it appears that after they have been engaged for some time in this occupation, they are attacked by painful swellings of the hands, and even the faces of many men are said to have swollen, probably owing to the strong carboline vapours emitted by the sleepers in the glaring sun.—*Revue du Cercle Militaire*.

INTRODUCTION OF A QUICK-FIRING FIELD GUN IN THE FRENCH ARTILLERY.

The introduction of the new 2 $\frac{5}{16}$ in. quick firing field-gun has now been definitively decided on by the French War Office. France having thus taken the lead by a final step in this long-pending question, other Continental Powers will no doubt soon follow suit. The trials lately instituted at the Camp of Chalons, before the President of the Republic, are said to have given the very best results. The only difficulty now in the way is the financial question, as probably the Chambers will be loth to vote the requisite twelve millions sterling. Strict secrecy is maintained as regards the ballistic properties of the new gun; all that is known is that fifteen shots were fired per minute, and that the recoil is almost entirely suppressed. The advantages are summed up as

follows, *viz.* increased ballistic performance, increased number of rounds, reduction of the length of marching columns, of the amount of impedimenta required, and of the length of front occupied by the artillery, as the number of guns need only be one half of that now required, thus generally expediting the formation of troops for action. The new batteries are to have four guns only, but twelve ammunition waggons; and each division will have three quick-firing batteries instead of six as now, and two ammunition columns. The so-called "Corps Artillery" will consist of eight batteries and two ammunition columns, so that, altogether, an Army Corps will have fourteen batteries as against twenty at present, and eight ammunition columns, or fifty-six guns instead of 120 as now, and 276 ammunition waggons instead of 296. There will thus be $5\frac{2}{3}$ ammunition waggons per gun instead of $2\frac{1}{3}$ as hitherto. Under the new system, twenty-six officers, 1660 men, and 1591 horses less will be required for the artillery in each Army Corps, and the War Office hopes that in view of the saving thereby entailed, the Chambers will offer no serious opposition to granting the requisite votes.—*La France Militaire*.

THE LATULIP FIELD GUN.

In the United States considerable interest is being taken in a new gun of strange design, which has been invented by a Mr. Latulip, of Syracuse, and which, so far as the trials have at present gone, has given very satisfactory results. The experimental gun is 5ft. 8in. long and of $2\frac{1}{2}$ in calibre, weighing 456lb., and is mounted on a specially constructed carriage as a field piece. The inner tube is of steel of $1\frac{1}{2}$ in. thick at the breech and tapering to $\frac{3}{4}$ in. at the muzzle. Upon this tube is wound strips of raw hide to a thickness of 1in. at the muzzle, and 3in. at the breech, cement being freely used to cause the strips to adhere, and also to soften them for the purpose of winding. The strips are of common cowhide, and after being thoroughly washed and cleansed, they are bathed in a solution of sulphuric acid and water for about ten minutes, for the purpose of drawing off the oil and grease in the hides, leaving them hard, tough as horn, and possessing great strength. When sufficient strips have been wound on the gun to obtain the desired thickness commensurate with the charge the gun is intended to carry, it is placed in a suitable lathe and turned to the shape desired. A steel shell in two portions is then fitted over the hide, and around all is passed two layers of copper wire. The inventor claims the following advantages for this gun, which can be made either muzzle or breech loading: cheapness, lightness (the gun only weighing half that of the ordinary steel gun); durability, it being much stronger than the ordinary gun, and can fire any number of rounds in rapid succession without heating. It is also claimed that tendency to transverse and longitudinal ruptures is reduced to a minimum, the raw hide giving the necessary tension to withstand the explosive effect of the charge.

The gun was officially tested by the officers of the Ordnance Board

of the United States Army at the proving grounds on Sandy Hook on July 23, with the following results:—

		Pressure to sq. in.
1st round, with 1lb. of ordinary powder.....		5,471
2nd " 1½lb " "		16,840
3rd " 2lb. " "		26,708
4th " 2lb. and two balls.....		26,845
5th " 2lb. quick rifle powder and 3 balls..		30,360

It was intended to test the gun up to 35,000lb. pressure, but on firing the fifth round the carriage gave way, and so brought the experiments to a close. The gun was found intact in every respect, and the tests will shortly be resumed, the inventor being anxious for the officials to burst it if they can. The gun was found perfectly cool after each round, and the recoil was about 6ft. If these trials are brought to a successful conclusion the inventor is to be congratulated on his new departure in the art of gun-making. Certainly the performance of the gun more than astonished the experimenting officers, who from all accounts expected it to burst at the very first discharge. It appears, however, that it had been under private trial for a month previous, and the inventor himself was thoroughly confident of its passing through the ordeal. Such a gun by reason of its lightness might prove of great value as a field-piece.—*Bombay Gazette.*

EMPLOYMENT OF HOMING PIGEONS AT SEA.

Under the auspices of *Le Petit Journal* an experiment on a large scale was recently arranged in order to test the value of homing pigeons for naval purposes, close on 4500 pigeons from various dovecotes being shipped on board the *Manoubia*. Out of this number 800 were started on the 30th. June at a distance of about ninety miles from home, 1600 more when 125 miles off. Rough weather compelled the vessel to run in at Belle Ile for shelter for two days, but on 4th July 600 pigeons were started at a distance of 186 miles, and on the next day 1500 at 310 miles. In the first place none of the pigeons suffered from seasickness, nor did the noise of the waves appear to affect them in any way. It has often been asserted that pigeons when released at sea will show a disinclination to leave the vessel, but perch on masts and spars. However, nothing of the kind happened; the pigeons never showed any hesitation, but at once made straight for their respective cotes, just as if they had been started on land. As regards losses, for distances of 125 miles and under they were lower than they are sometimes in contests on land, varying from 4 to 12 per cent. For the distance of 186 miles the losses averaged 41 per cent., and for 310 miles 75 per cent. These figures speak for themselves, but it must be borne in mind in considering them that the experiment was improvised, and that a large number of the pigeons had never seen the sea.—*Broad Arrow.*

THE ARMAMENT OF MERCHANT CRUISERS.

Thirty complete sets of guns, mountings, and gunnery stores, for use when required upon merchant cruisers, are to be distributed at

Portsmouth, Chatham, and Devonport, eight sets at each; Hong Kong four, and Sydney two. Each set will consist of eight breech-loading and eight Nordenfeldt machine guns.—*Broad Arrow*.

THE PROTECTION OF HARBOURS BY BOOMS.

(*Illustrated.*)

Booms have now been very generally adopted as auxilliary defences for the protection of harbours against attack by torpedo boats. They may be constructed in a great variety of ways, and if the requisite material is available, may be rendered capable of resisting the most severe shocks. They consist either of single wire cable; chains buoyed up by ships spars; or plain baulks of timber. The booms prepared at Portland and Bantry Bay, during the naval manœuvres, were made of ships spars joined together by wire cables and moored with kedge anchors 200 yards apart. At Port Hamilton in 1885, two booms were constructed, one behind the other, each composed of $5\frac{1}{2}$ " cables resting on spars lashed together in the form of a square. Booms of this description would be suitable for Squadron defence, but for a protected harbour, something more substantial would be required, something that would stop a large vessel at speed as well as a launch or torpedo boat.

Such a boom would consist of a cable of 6 strands of 6" wire rope, buoyed up by floats of timber. Each float is composed of nine baulks of timber $12" \times 12"$, cut into convenient lengths for handling, and placed head and butt alternately. The centre baulk is slit down diagonally, and one half removed to give room for the cable. The baulks are bound together by chains and screw plates as shown in the diagram and each section is coupled by shackles with 3' of drift so as to give the required flexibility to the boom. When a sufficient number of sections have been strung together to reach from one mooring to another, the construction of the boom is complete.

The resisting power of a boom will depend greatly upon the manner in which it is moored. If it is moored so as to yield, the force of impact will be gradually absorbed and the resisting power greatly increased.

A boom of this description has just been prepared for the protection of the Medway. It is composed of two sections, and consists of a net work of wire hawsers supported by large rafts of timber and four obsolete gunboats. The boom will stretch across the river from a point near the extremity of Sheerness Harbour, and after being tested, will be stored in Chatham Dockyard, ready for use when required. Booms constructed in the manner described are likely to prove useful adjuncts to the defences of several of our Indian harbours.—*Journal of United Service Institution of N. S. W., and Broad Arrow*.

CYCLE AMBULANCES.

A cycle ambulance has recently been invented by Dr. Hoening, in Germany. It consists of a car covered in with canvas, which contains a folding litter, and rests on four wheels, with a fifth wheel in front, which is pedalled by a cyclist. There is also a seat and pedals for a cyclist at

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the back. The whole top part of the car above the axles can be lifted off bodily, a patient is then placed on the litter, and the whole replaced on the axles. A glazed window permits the cyclist at the back to watch the patient, who moreover holds in his hand the rubber ball of a cycle horn, by means of which he can attract the attention of the cyclists, and an aperture in the side of the car enables the attendants to provide for his wants during the journey. It is said that this ambulance, which is in experimental use in Berlin, is very easy to manipulate and steer.—*Bombay Gazette.*

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